■ ACCESSORIES/PACKAGE LIST

HV-G55 GPSE, AGPSE, IPK
HV-G53 AGPSE

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	1	*89-JU4-901-010	INSTRUCTION BOOKLET E (G55GPS E/AGPS E/IP K)	*	1
	2	*89-JU4-902-010	INSTRUCTION BOOKLET ED(G53AGPS E)	*	1
	3	*87-034-593-010	CORD,RF PAL		1
	4	*87-034-755-010	AC CORDSET ASSY E (G55GPS E/AGPS E,G53AGPS E)		1
	5	*87-034-999-010	AC CORD ASSY,UK(G55IP K)		1
	6	*89-JU5-638-010	UNIT,RC-TG50P(G55GPS E/AGPS E/IP K)		1
	7	*89-JU5-639-010	UNIT,RC-TG51P(G53AGPS E)		1

HV-G51 GPSE

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	1	*89-JU6-901-010	INSTRUCTION BOOKLET E	*	1
	2	*87-034-593-010	CORD,RF PAL		1
	3	*87-034-755-010	AC CORDSET ASSY E		1
	4	*89-JU5-639-010	UNIT,RC-TG51P	*	1

HV-G50 GPSH, DIPH

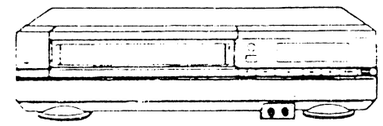
PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	1	*89-JU5-901-010	INSTRUCTION BOOKLET H	*	1
	2	*87-034-593-010	CORD,RF PAL		1
	3	*87-034-755-010	AC CORDSET ASSY E		1
	4	*89-JU5-638-010	UNIT RC-TG50P	*	1

S/M Code No.89 - 095 DATE OF ISSUE 2/1990 - I

AIWA®

SERVICE MANUAL

HV-G50GPS/DIP
HV-G51GPS
HV-G53AGPS
HV-G55GPS /AGPS/IP



VIDEO CASSETTE RECORDER

BASIC VIDEO MECHANISM : TN - 5900 ● TYPE G50GPSH,DIPH G51GPSE G53AGPSE G55GPSE,AGPSE,IPK

AIWA Co., Ltd. Tokyo Japan

Printed in Japan

■SPECIFICATIONS----4

■STANDARD MAINTENANCE----5~6
1. SERVICE SCHEDULE OF COMPONENT----5
2. CLEANING----6

■SERVICE JIG AND TOOLS----7~8
1. SERVICE JIG AND TOOLS----7
2. HOW TO ASSEMBLE THE JIGS----8

■DISASSEMBLY----9~21

■ELECTRICAL MAIN PARTS LIST----22~26

■PRACTICAL SERVICE FIGURE----26

■BLOCK DIAGRAM----27~38
●BLOCK DIAGRAM-1(VIDEO)----27~28
●BLOCK DIAGRAM-2(SERVO/SYSCON,HV-G50/G53)----29~30
●BLOCK DIAGRAM-3(SERVO/SYSCON,HV-G51)----31~32
●BLOCK DIAGRAM-4(SYSTEM CONTROL)----33~34
●BLOCK DIAGRAM-5(TUNER)----35~36
●BLOCK DIAGRAM-6(AUDIO/POWER UNIT)----37~38

■WIRE HARNESS DIAGRAM----39~40

■WIRING-1 (VIDEO/TUNER/SERVO/SYSCON)----41~42

■SCHEMATIC DIAGRAM-1 (VIDEO)----43~45

■WAVE FORM-1 (SERVO WAVEFORM)----46~47

■DRUM SERVO SYSTEM TIMING CHART----47~48

■SCHEMATIC DIAGRAM-2 (SERVO/SYSCON)----49~51

■NOISE CANCELLER TIMING CHART----52

■IC BLOCK DIAGRAM-1----53
●IC, BA7025AF, LA8982AC, SBX1620-13----53

■WAVE FORM-2 (AUDIO WAVE FORM)----54~56

■SCHEMATIC DIAGRAM-3 (TUNER)----57~58

■WAVE FORM-3 (TUNER WAVE FORM)----59~60

■IC BLOCK DIAGRAM-2----61
●IC, MSM16811/IC, LVA522S----61

■SYSTEM SWITCH MODE----62

■WIRING-2 (POWER UNIT/PRE AMP./AUDIO/MECHANISM)----63~64

■SCHEMATIC DIAGRAM-4 (PRE AMP./AUDIO/POWER UNIT)----65~68

■WIRING-3 (TIMER/DISPLAY)----69~70

■SCHEMATIC DIAGRAM-5 (TIMER/DISPLAY)----71~72

■WAVE FORM-4 (POWER WAVE FORM)----73~75
(TIMER WAVE FORM)----75~76
(VIDEO WAVE FORM)----77~81

SPECIFICATIONS

Recording/playback system
Video: Rotary 2 heads helical scan system
Audio: Fixed head

Video signal
HV-G55
HV-G53 (AGPSE ONLY)
IP K model: PAL color signal
GPS E/AGPS E model:
PAL/MESECAM color signal
625 lines, 50 Hz
HV-G51
PAL/MESECAM color signal
625 lines, 50 Hz
HV-G50
GPS H model:
PAL/MESECAM color signal
DIP H model: PAL color signal
625 lines, 50 Hz

Recording/playback time
4 hours max. with E 240 tape, standard speed

Fast forward/rewind time
Less than 300 sec., with E 240 tape

Tape speed
Standard speed, 23.39 mm/sec.

Tape width
12.65 mm

Usable cassette
VHS video cassette

Timer display
24-hour clock
day, hour, minute
digital fluorescent display

Timer recording
7 programs within 2 weeks
1 program for weekly recording

Time accuracy
±25 sec. or less (monthly)

Channel coverage
HV-G55
HV-G53 (AGPSE ONLY)
IP K model
UHF: 21 – 69 channels
GPS E model
VHF: I1 – E4 and E5 – E12 channels
UHF: 21 – 69 channels
AGPS E model
VHF: E2 – E4 and E5 – E12 channels
S1 – S20 channels
UHF: 21 – 69 channels
HV-G51
VHF: E2 – E4 and E5 – E12 channels
UHF: 21 – 69 channels
HV-G50
GPS H model
VHF: I1 – E4 and E5 – E12 channels
UHF: 21 – 69 channels
DIP H model
VHF: 1 – 5 and 6 – 12 channels
UHF: 13 – 57 channels (PAL K)
21 – 69 channels (PAL I)

RF output
UHF channel between 30 and 39

RF output level
75 dB

Video input
0.5 – 2.0 Vp-p, 75 ohms unbalanced

Video output
1.0 Vp-p, 75 ohms unbalanced

Horizontal resolution
240 lines (nominal)

Video S/N (luminance)
43 dB (nominal)

Audio input
–10 dBs (nominal)

Audio output
–8 dBs, 2.2 k ohms

Audio frequency response
200 Hz – 8 kHz

Audio S/N
43 dB (nominal)

Operating temperature
5°C – 40°C

Power requirements
HV-G55
HV-G53 (AGPSE ONLY)
IP K model
220 V AC, 50/60 Hz
AGPS E model
110 – 240 V AC, 50/60 Hz
HV-G51
220 V AC, 50/60 Hz
HV-G50
110 – 240 V AC, 50/60 Hz

Power consumption
21 watts

Dimensions
380 (W) × 95 (H) × 315 (D) mm

Weight Approx. 5.1 kg

● **Design and specifications are subject to change without notice.**

1. IC, [illegible] (IC201)----
2. IC, [illegible] (IC401)----
3. IC, [illegible]----
4. IC, [illegible]----
5. IC, [illegible] (IC681)----

■CIRCUIT DESCRIPTION----
1. AUTO TRACKING----
2. AUTO NOISE CANCELLER----

■ELECTRICAL ADJUSTMENT----
1. POWER VOLTAGE ADJUSTMENT----
2. CLOCK FREQUENCY ADJUSTMENT----
3. SERVO CIRCUIT ADJUSTMENT----
(1) TRACKING ADJUSTMENT----
(2) SWITCHING POSITION ADJUSTMENT----
4. VIDEO CIRCUIT ADJUSTMENT----94~95
(1) PB Y LEVEL ADJUSTMENT----94
(2) Y DELAY LEVEL ADJUSTMENT----94
(3) AGC ADJUSTMENT----
(4) Y-FM CARRIER FREQUENCY ADJUSTMENT----95
(5) Y-FM DEVIATION ADJUSTMENT----95
(6) REC Y-FM LEVEL ADJUSTMENT----95
(7) CHROMA RECORDING CURRENT ADJUSTMENT----95
5. TUNER SECTION ADJUSTMENT----95
(1) REG 9V VOLTAGE ADJUSTMENT----95
6. AUDIO CIRCUIT ADJUSTMENT----
(1) RECORDING BIAS CURRENT ADJUSTMENT----

■TRANSISTOR ILLUSTRATION----

■MECHANICAL ADJUSTMENT----
1. TAPE TRANSPORT ADJUSTMENT FLOWCHART----
2. TAPE RUNNING POSITION ADJUSTMENT----
3. AFT HEAD ADJUSTMENT----
4. [illegible]----
5. [illegible]----
6. [illegible]----
7. [illegible]----

■EXPLODED VIEW, MECHANICAL PARTS LIST----
●EXPLODED VIEW-1----
●EXPLODED VIEW-2----
●EXPLODED VIEW-3----
●EXPLODED VIEW-4----
●EXPLODED VIEW-5----
●EXPLODED VIEW-6----
●EXPLODED VIEW-7----
●EXPLODED VIEW-8----

■ACCESSORIES/PACKAGE LIST----

STANDARD MAINTENANCE

1. SERVICE SCHEDULE OF COMPONENT

○ : Check ● : Change

Ref. No.	Name	Periodic Service Schedule 1000 h	2000 h	3000 h	4000 h
2-2	UPPER DRUM	○	●	○	●
4-6	PINCH ROLLER A		●		●
3-32	CAPSTAN MOTOR ASSY		●		●
5-27	CLUTCH ASSY		●		●
4-46	LM ASSY			●	
6-22	MAIN BELT		●		●
3-5	BT BAND ASSY		●		●
5-29	DRIVE BELT		●		●
4-41	BRAKE SHOE		●		●
6-1	LOADING BELT		●		●
5-26	REEL BELT		●		●
2-5	DRUM EARTH			●	
4-21	ACE HEAD HV224206			●	
4-37	REEL ASSY			●	
4-57	FULL ERASE HEAD			●	

NOTE :
1. Clean all parts for the tape transport.
Upper drum with a video head / Pinch roller A
A/C head / Full erase head

2. HOW TO ASSEMBLE THE JIGS

1. Assembling the J-8 (See Figure-1)

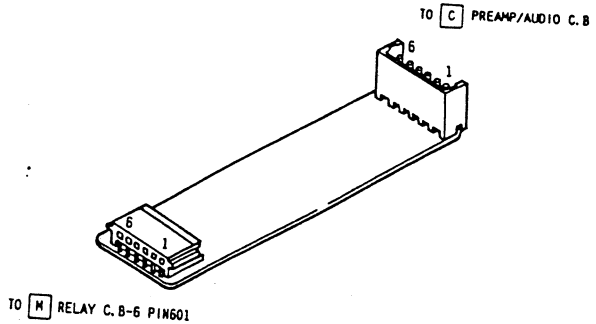


Fig-1

Place the circuit board with the solder side down as shown in the figure above and assemble the connectors, taking care of their directions.

2. Using the J-8 (See Figure-1)

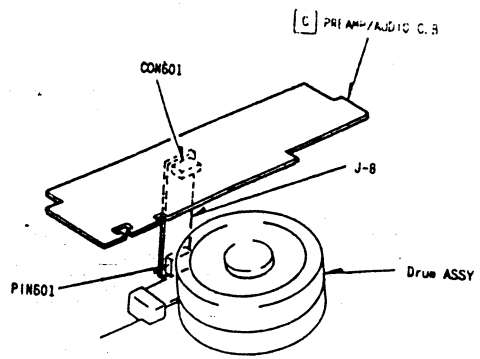


Fig-1

Use this jig when servicing the "Preamp/Audio circuit board".

DISASSEMBLY

1. "CABINET FRONT ASSY" REMOVAL (See Figure-1)
   1) Remove 4 screws (A) holding the "Cabinet, Steel".
   2) Remove 7 screws (B) holding the "Bottom, Plate".
   3) Remove 3 screws (C) and release 5 hooks to remove the "Cabinet front ASSY".

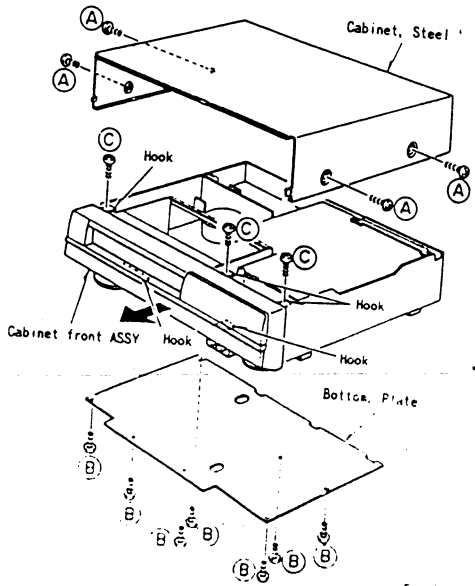


Fig-1

2. "POWER UNIT ASSY" AND "MAIN CIRCUIT BOARD" REMOVAL (See Figure-2)
   1) Remove 5 screws (A) holding the "Main circuit board".
   2) Remove 2 screws (B) and 2 screws (C) holding the "Power unit ASSY".

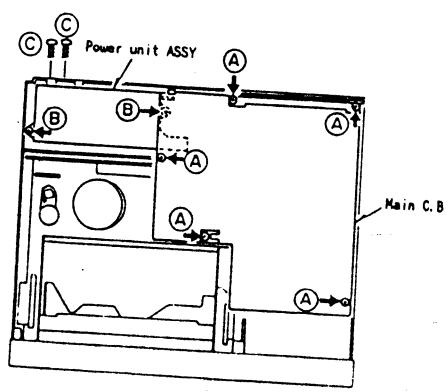


Fig-2

3. "MECHANISM ASSY" REMOVAL (See Figure-3)
   1) Remove screw (A) and disconnect the connector to remove the "Preamp/Audio circuit board" in the direction of the arrow.
   2) Remove 3 screws (B) holding the "Mechanism ASSY".

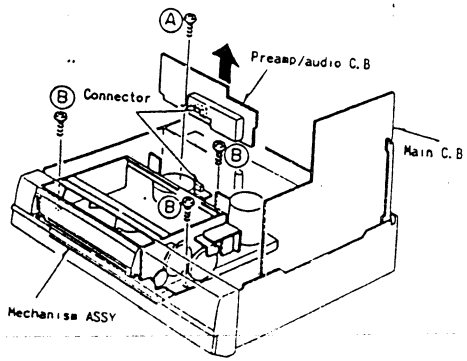


Fig-3

4. "FRONT LOADING ASSY" REMOVAL (See Figure-4)
   1) Remove "Main belt".
   2) Remove 4 screws (A).
   3) Release the hooks on both sides and remove the "Front loading ASSY". (Since it is difficult to release these hooks, hold the front of the "Front loading ASSY" and shake it up and down to release them.)

5. "CASSETTE LOAD BRACKET ASSY" REMOVAL (See Figure-4)
   1) Remove 1 screw (B).
   2) Take off the "Cassette load bracket ASSY".

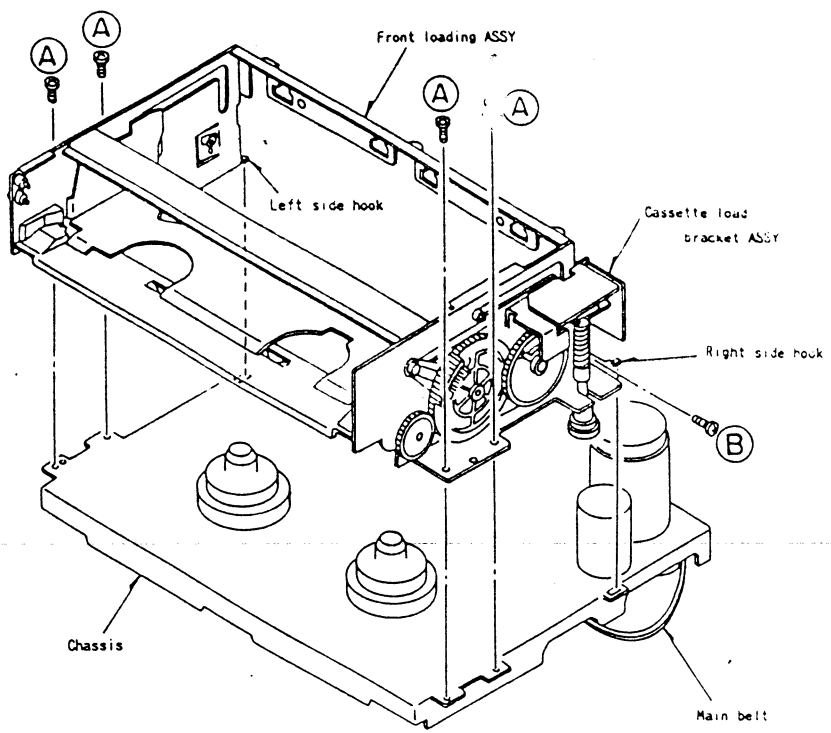


Fig-4

1. "Lamp holder ASSY" Removal
   1) Remove 1 screw (A), and take off the "T soft brake ASSY". (At this time, never take off the "T-spring, soft brake arm".)
   2) Release the "Lamp holder ASSY" from hook (a) of the chassis and turn it counterclockwise to remove it from the chassis.
2. "Switch C.B", "Sensor guide" and "End sensor C.B" Removal
   1) Remove 1 screw (B) and take off the "Switch C.B".
   2) Remove 1 screw (C) and take off the "Sensor guide".
   3) Remove 1 screw (D) and take off the "End sensor C.B".
3. "Sensor guide" and "Start sensor C.B" Removal
   1) Remove 1 screw (E) and take off the "Sensor guide".
   2) Remove 1 screw (F) and take off the "Start sensor C.B".

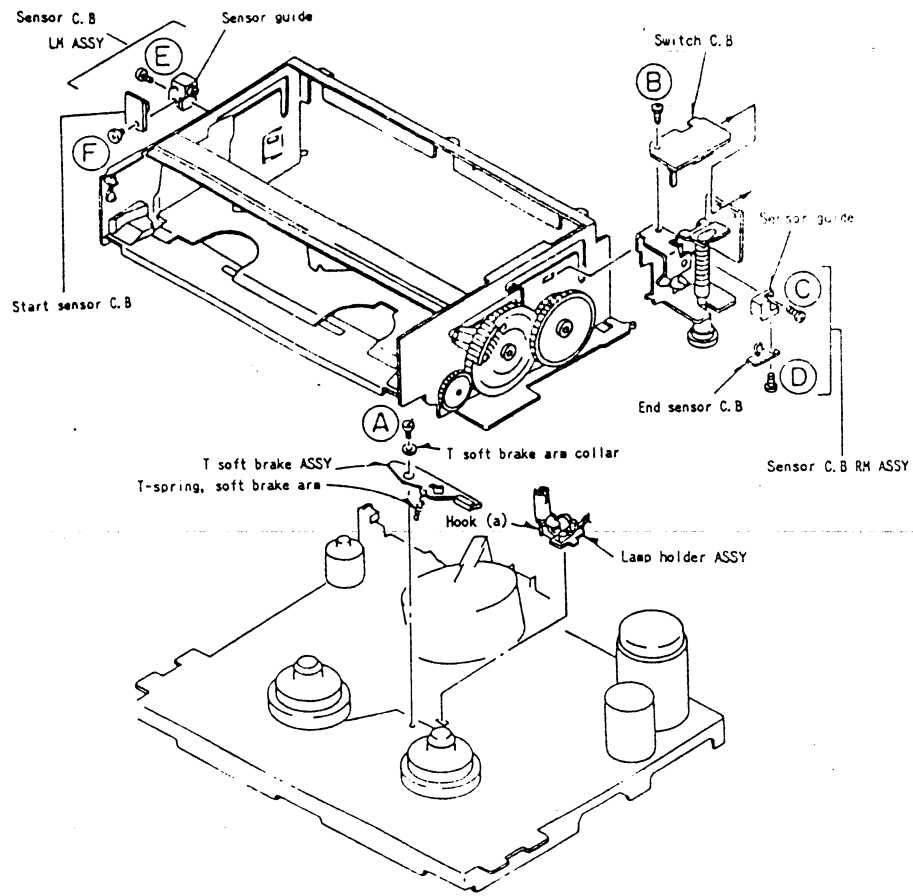


Fig-5

7. "FE PLATE" AND "ACE HEAD" REMOVAL (See Figure-6)

1. "FE plate" Removal

1) Remove Nut (A).

2) Take out the "Impedance roller" and pull up the "FE plate".

(Take care not to lose parts "Impedance roller", "Impedance roller sleeve", "Tape guide frange A", "Tape guide flange spring" and "Plane washer 3×8×0.5" at the time of the "FE plate" removal.)

3) Remove 1 screw (B) and take off the "Full erase head".

2. "ACE head" Removal

1) Remove 3 screws ((C)×1, (D)×1, (E)×1) and "Azimuth spring".

2) Remove "ACE head".

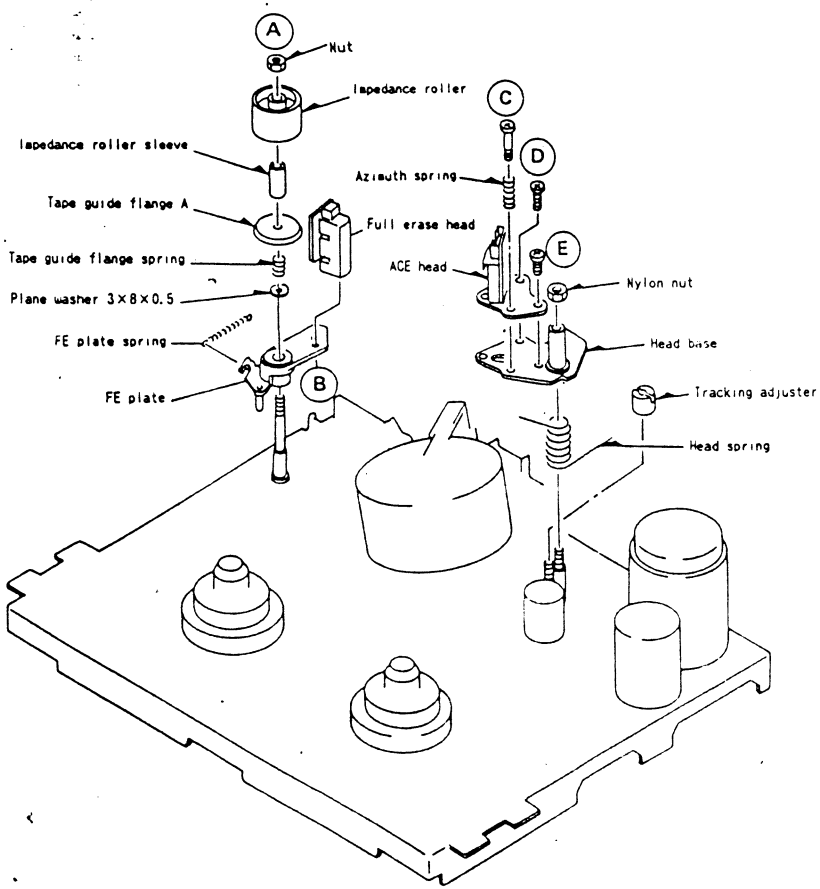


Fig-6

8. "GEAR HOLDER ASSY" REMOVAL (See Figure-7)

1) Remove the "Front loading ASSY".

2) Remove "Drive belt".

3) Remove PW and "Middle pulley ASSY".

4) Remove NW (A) and take off the "Clutch ASSY".

5) Remove 1 screw (B) and 2 screws (C) and take off the "Gear holder ASSY".

6) Remove 1 screw (D) and take off the "T-spring, soft brake arm".

7) Take off the "T soft brake ASSY".

8) Remove 2 "E-Rings (E)" and take off the 2 "Reel drive gear".

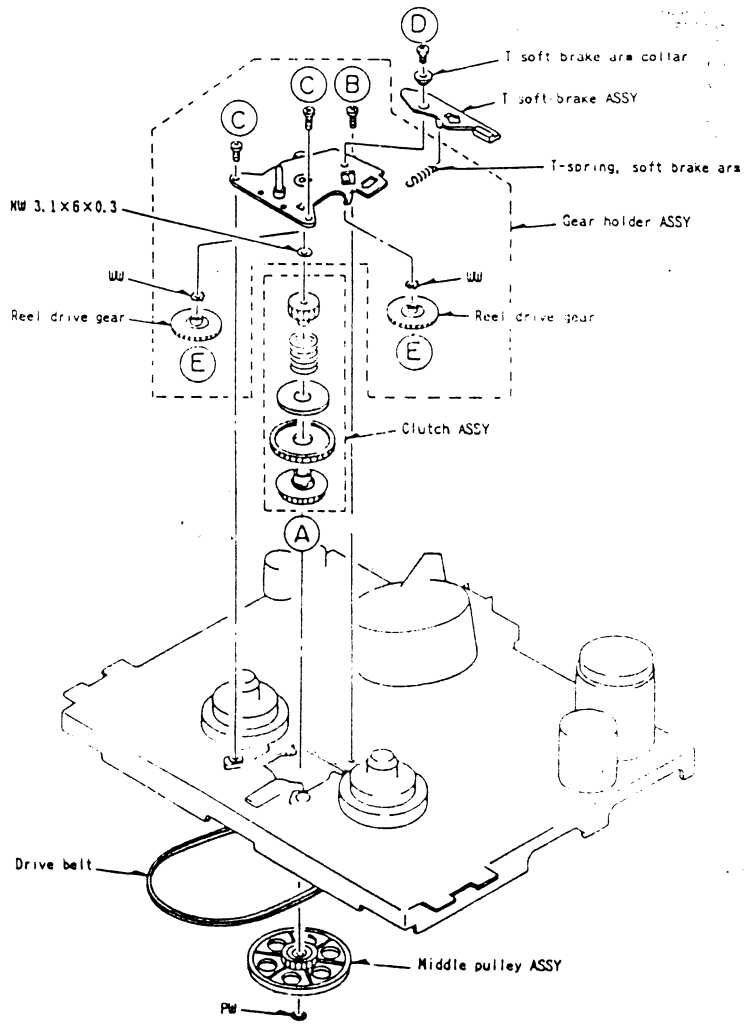


Fig-7

1. CLEANING OF "VIDEO HEAD" (See Figure-1)

Head cleaning by using a chamois skin.

– Procedure –

1) Remove the "Cabinet, Steel".
2) Put on a glove (thin type) to avoid touching the "Upper drum" and "Lower drum" with bare hand.
3) Put a few drops of alcohol on the Chamois Skin, and by slightly placing it against the "Head tip", allow the "Upper drum" to turn the right and left.

– Remark –

1) The video head is of very hard material, but since it is very thin, avoid cleaning it vertically.
2) Wait for the cleaned part to dry out, before operating the unit.
3) Do not reuse the Stained chamois skin.

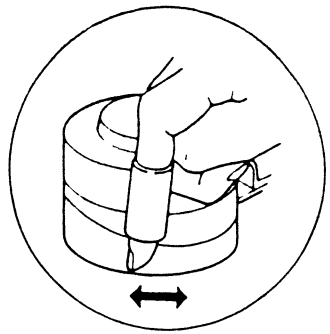


Fig-1

2. CLEANING OF "ACE HEAD" (See Figure-2)

Head cleaning by using a chamois skin.

– Procedure –

1) Remove the "Cabinet, Steel".
2) Put a few drops of alcohol on the chamois skin, clean up the "Audio control head", being careful not to damage the "Upper drum" and other tape running parts.

– Remark –

1) Avoid cleaning "[illegible]" vertically.
2) Wait for the [illegible] to dry out before operating the unit.

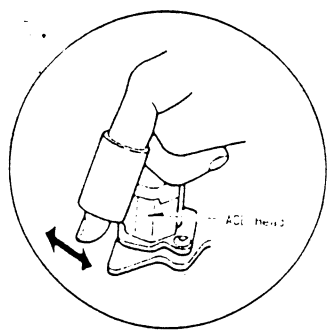


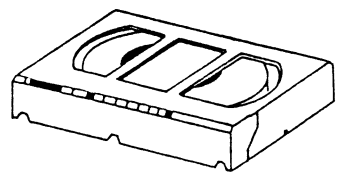
Fig-2

SERVICE JIG AND TOOLS

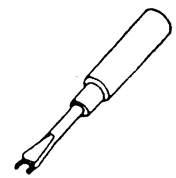
1. SERVICE JIG AND TOOLS

Ref. No.	Name	Adjustment
J-1	Torque Meter (FSJ-VHT-063)	Back Tension
J-2	Special Driver (SMALL)	Tape Running Position, Envelope Wave Form
J-3	Special Driver (LARGE)	X Value
J-4	Mirror	Tape Transportation Check
J-5	Alignment Tape (TTV-P2)	X Value, Envelope Wave Form, ACE Head Height
J-6	Alignment Tape (TTV-P1)	ACE Head Height / ACE Head Tilt
J-7	Hex Driver #3	Tape Running Position, X Value, Envelope Wave
J-8	Ext. PCB. KIT (A) (Parts No. 09-054-012-010)	HA (For repair of circuit board)

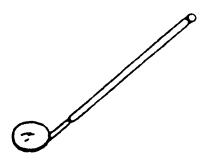
J-1, J-5, J-6



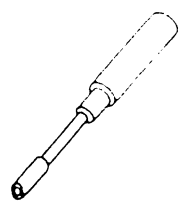
J-2, J-3



J-4



J-7



15. "LOADING GEAR" AND "LOADING CAM ASSY" REMOVAL (See Figure-14)
    1) Take off the "Loading belt" from the "Loading pulley".
    2) Remove PW(A) and take off the "Loading pulley".
    3) Remove PW(B) and take off the "Loading gear".
    4) Remove PW(C) and take off the "Eject arm" and the "Brake actuate arm".
    5) Remvoe 2 screws (D), and take off the "Loading lever reinforce plate" and the "Loading lever ASSY".
    6) Take off the "Loading cam ASSY".

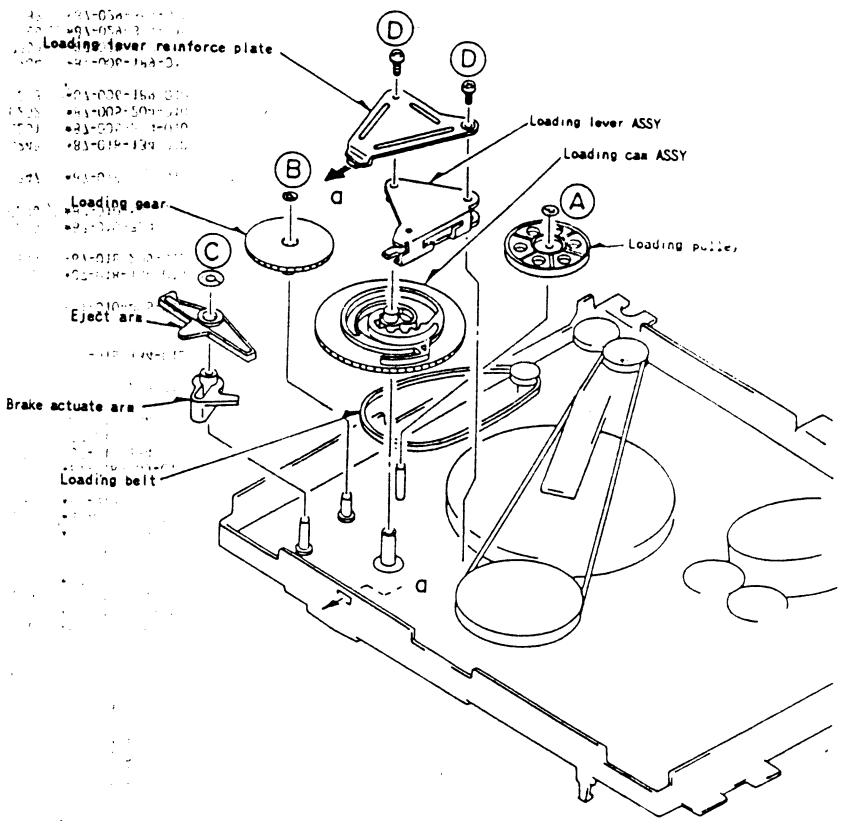


Fig-14

16. "FLYWHEEL CAPSTAN" REMOVAL (See Figure-15)
    1) Remove the NW(A).
    2) Take off the "Drive belt" and "Main belt".
    3) Remove 2 screws (B) and take off the "FL angle ASSY".
    4) Take off the "Flywheel capstan".

■Remark■
Do not miss the PW when pulling out the "Flywheel capstan".

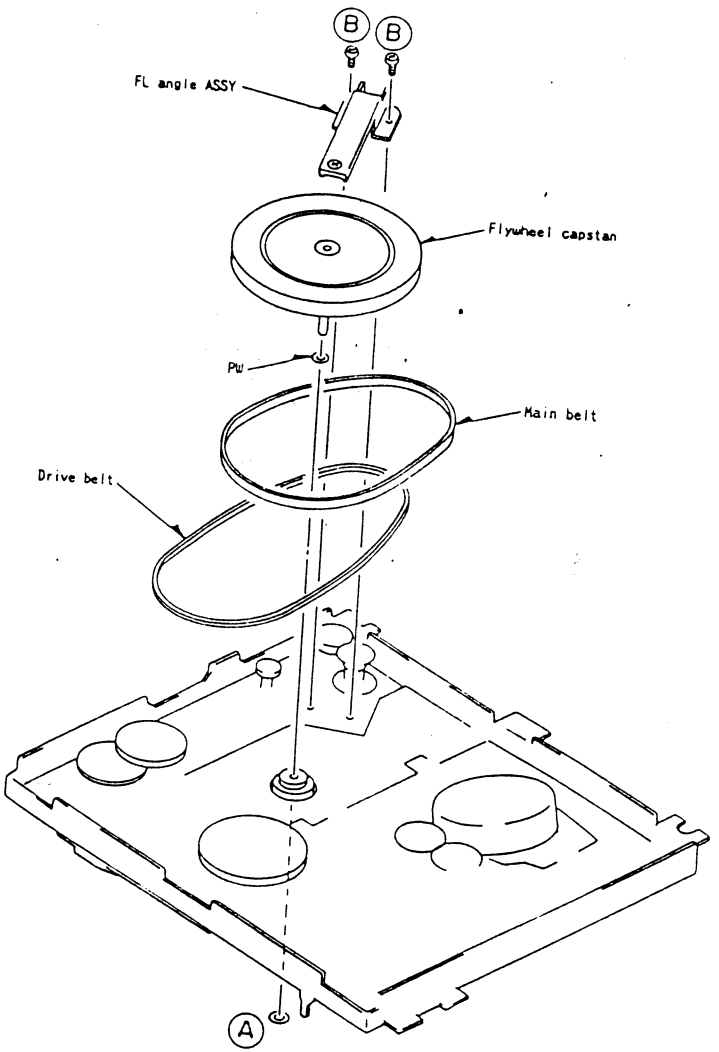


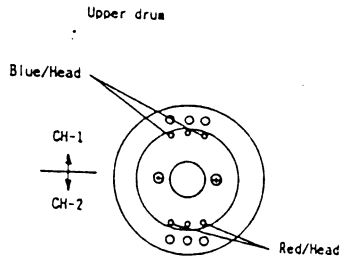
Fig-15

12. "UPPER DRUM" REMOVAL (See Figure-11)

1) Remove the "Front loading ASSY".
2) Remove 1 screw (A) and take off the "Drum earth bracket".
3) Remove 2 screw (B) and take off the "Upper drum".

≡Remark≡

1. Use gloves and do not touch the drum surface with bare fingers.
2. If the Video head is defective, replace the complete "Upper drum" with the Head.



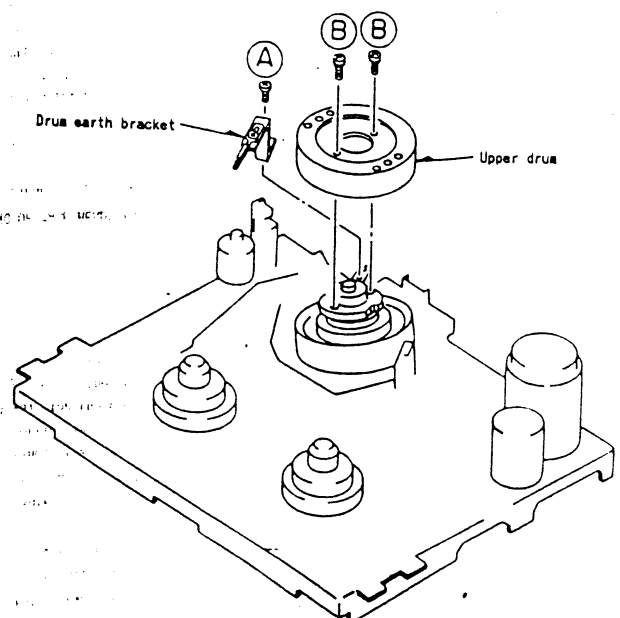
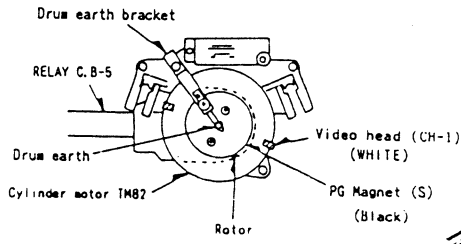


Fig-11

13. "CYLINDER MOTOR" REMOVAL (See Figure-12)

1) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
2) Remove 2 screws (A) and take off the "Cylinder motor TM82".
3) Remvoe 3 screws (B) and take off the "Cylinder motor TM82".



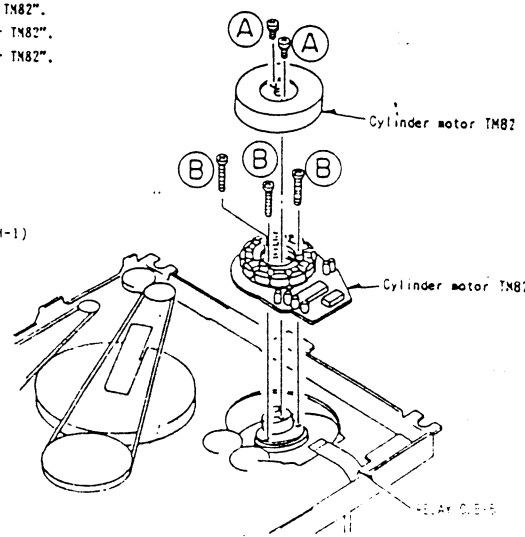


Fig-12

14. "CAPSTAN MOTOR ASSY" AND "LOADING MOTOR ASSY" REMOVAL (See Figure-13)

1. "Capstan Motor ASSY" Removal
   1) Take off the "Drive belt" and "Main belt".
   2) Remove 2 screws (A) and take off the "Capstan motor ASSY".
2. "LOADING MOTOR ASSY" Removal
   1) Take off the "FL belt".
   2) Remove 2 screws (H) and take off the "Loading motor ASSY".

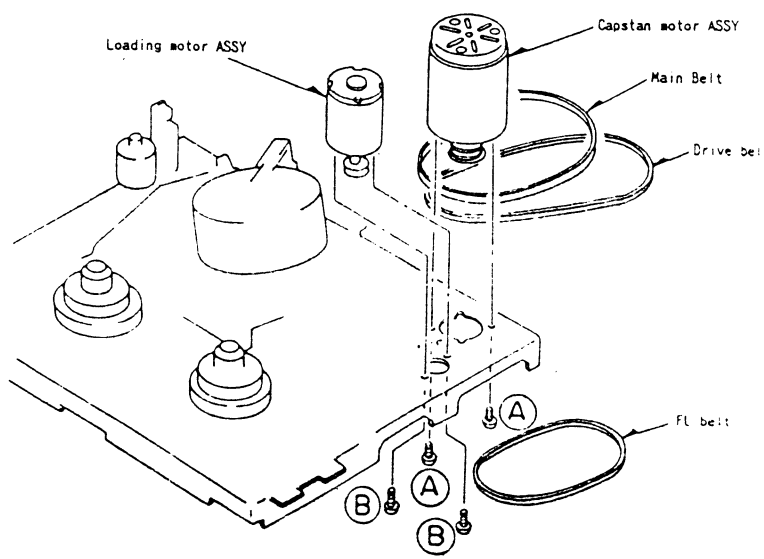


Fig-13

17. "REEL SENSOR" REMOVAL (See Figure-16)
    1. Remove "Front loading ASSY" and the "Gear holder ASSY".
    2. Remove "Reel ASSY".
    3. Remove "Reel sensor".

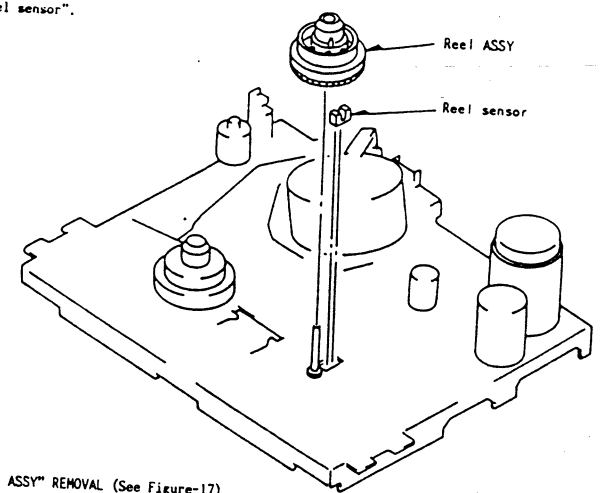


Fig-16

18. "LOADING BASE SEMI ASSY" REMOVAL (See Figure-17)
    1) Remove "Cylinder ASSY", "BT arm semi ASSY", "BT band ASSY" and "Front loading ASSY".
    2) Remove 1 screw (A) and "L gear plate collar", "L gear plate".
    3) Remove 2 screws (B).
    4) Take off the "Loading base semi ASSY".

    ≡Remark≡

    When installing the "L gear plate", align markings (C) on the "T loading gear L" and "L gear plate".

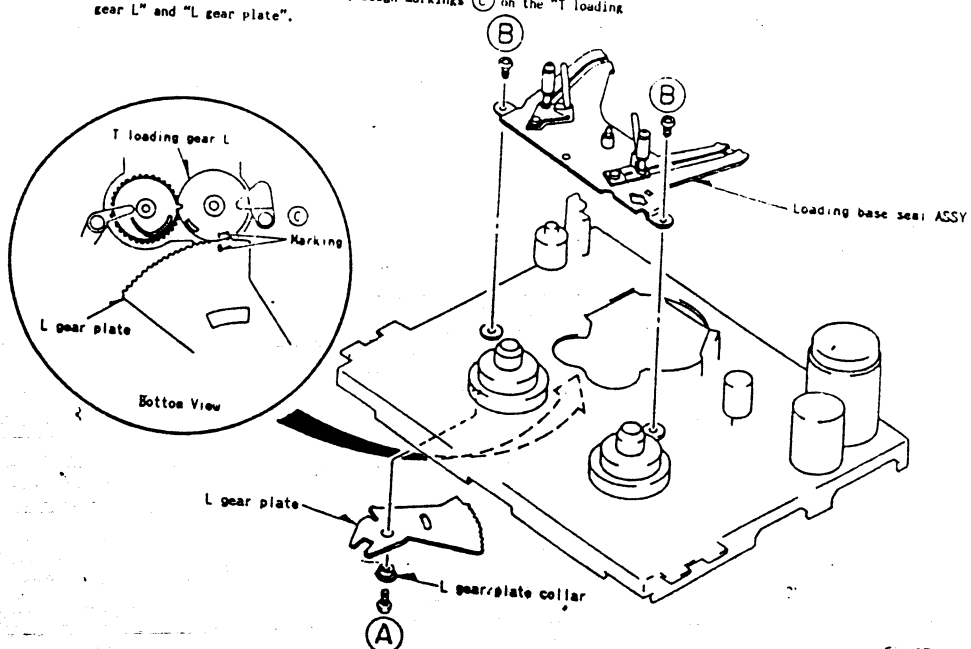
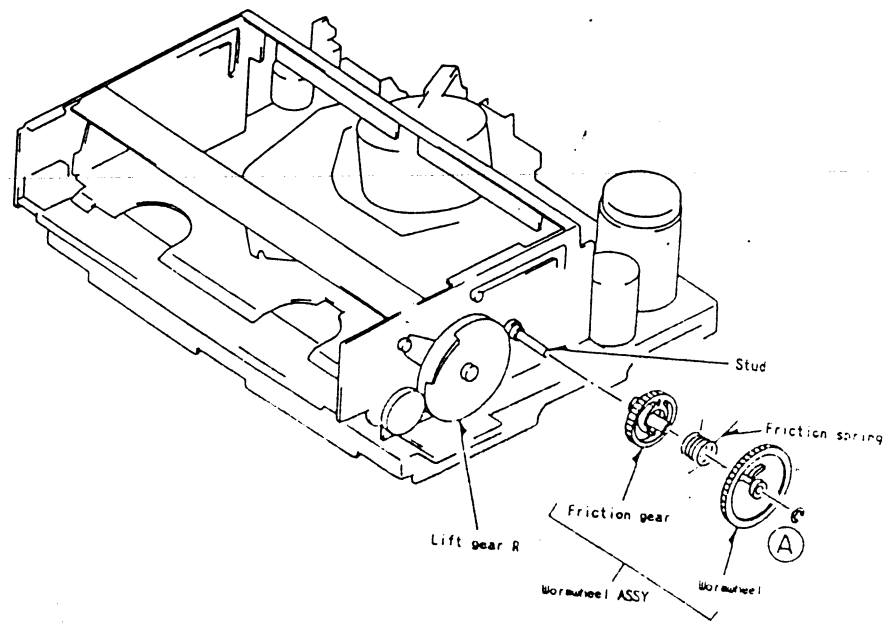


Fig-17

19. "WORMWHEEL ASSY" REMOVAL (See Figure-18)
    1. Disassembly
        1) Remove "Cassette load bracket ASSY".
        2) Remove E-Ring (A).
        3) Remove "wormwheel ASSY". ("wormwheel", "Friction spring", "Friction gear")
    2. Assembly
        1) Turn the "Lift gear R" fully counterclockwise.
        2) Restore "wormwheel ASSY" to the stud.

    ≡Remark≡

    Match "Lift gear R" to the "wormwheel hole" as illustrated.



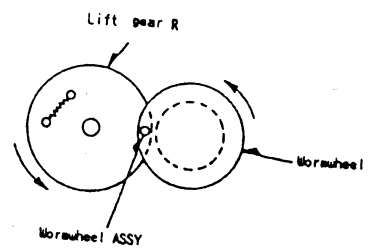


Fig-18

1) Remove the "Front loading ASSY".
2) Remove PW (A) and "BT actuate plate spring" from the "BT arm semi ASSY".
3) Remove 1 screw (B) and "Band holder spring".
4) Take off the "BT band ASSY" from the "BT arm semi ASSY".

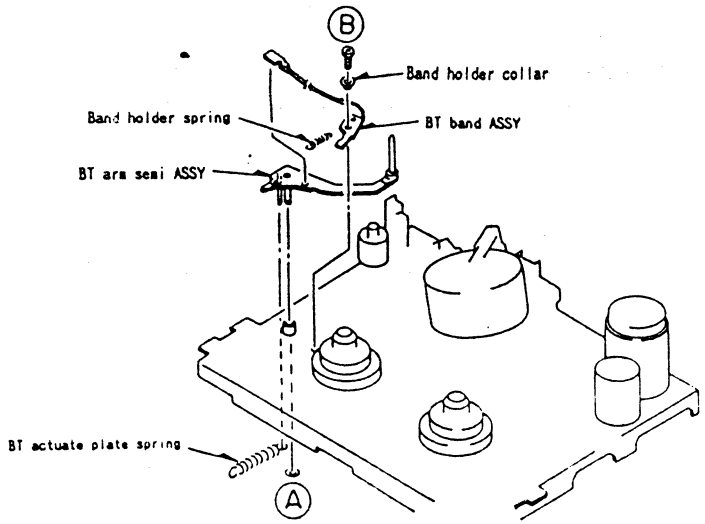


Fig-8

10. "REEL ASSY" REMOVAL (See Figure-9)
1) Remove the "Front loading ASSY", "Gear holder ASSY" and "BT band ASSY".
2) Remove 1 screw (A) and the "Back tension support".
3) Remove the 2 "Reel ASSY".

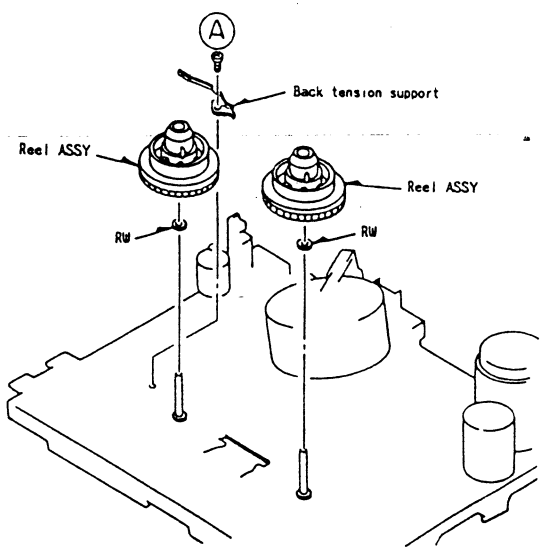


Fig-9

REMOVAL (See Figure-10)
1) Remove the "Front loading ASSY".
2) Pull out the "RELAY C.B-5" from the "Cylinder motor TM82".
3) Remove 1 screw (A) and take off the "Drum earth".
4) Remove 3 screws (B) and take off the "Cylinder ASSY".

≡Remarks≡
Take off the "Cylinder ASSY" carefully without any damage.

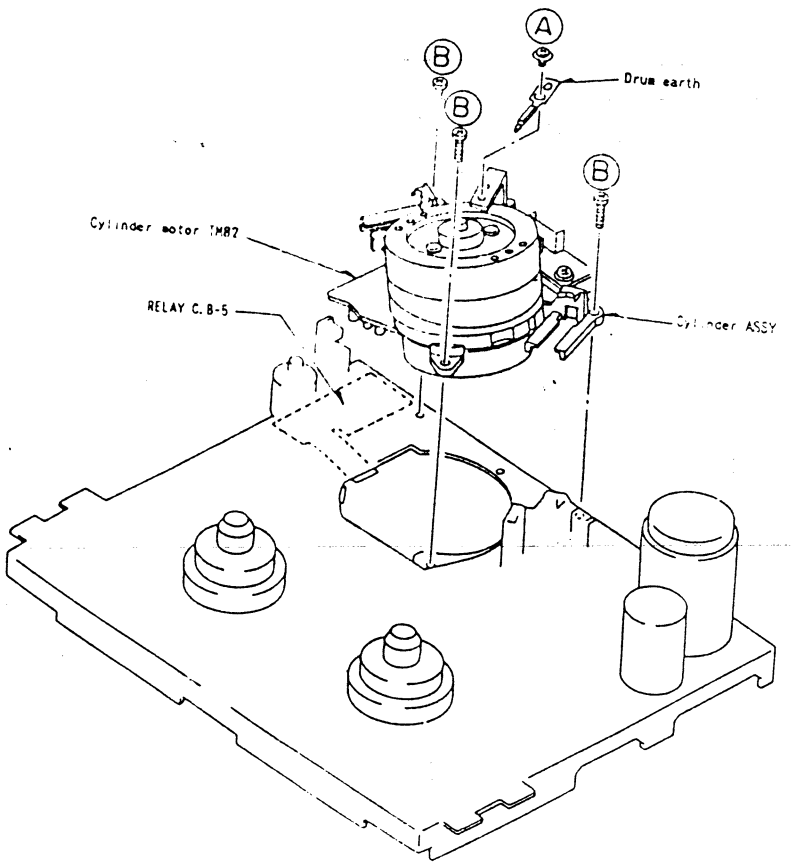


Fig-10

T101	*S0-05T-001-010	TRANSFORMER TS29K21V

=== POWER CIRCUIT BOARD-3 SECTION ===

C301	*87-010-050-010	CAP,ELECT 470-25V
C305	*S0-05C-003-050	CAP,ELECT 33-63V
C306	*87-010-041-010	CAP,ELECT 33-50V
R305	*S0-05R-003-050	RES,MF 12 1/2W
T301	*S0-05T-003-010	TRANSFORMER FSM-89057

=== MISCELLANEOUS ===

	S8-059-010-160	UPPER DRUM(W/VIDEO HEAD)
	S8-059-013-040	LOWER DRUM ASSY
DS1	*S6-808-080-040	DEW SENSOR EYH-S1OR
M1	S6-004-090-010	CYLINDER MOTOR TM82
M2	S8-059-073-020	CAPSTAN MOTOR ASSY
M3	S8-059-113-010	LOADING MOTOR ASSY
SW4	S6-401-011-510	LEAF SW(REC SAFETY)

PRACTICAL SERVICE FIGURE

Output Level

Video (Impedance) : 1.0±0.2Vp-p (75Ω±20%, Unbalance)

Audio (Impedance) : -8±3dB (Less than 3.3kΩ)

RF Modulated (Impedance): 75±3dBμV (75Ω, Unbalance)

Input Level

Video (Impedance) : 0.5V~2.0V±0.5Vp-p (75Ω±20%, Unbalance)

Audio (Impedance) : -10±3dB (More than 47kΩ)

TV channels received

HV-G55

Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
AGPS E	B	G	E2~E4 S1~S2	E5~E12 S3~S20	21~69	Meets FTZ Specifications VIF 38.9 SIF 33.4
IP K	-	I	×	×	21~69	39.5 33.5
GPS E	B	G	I1~E4	E5~E12	21~61	VIF 38.9 SIF 33.4

HV-G53

Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
AGPS E	B	G	E2~E4	E5~E12 S1~S20	21~69	Meets FTZ Specifications VIF 38.9 SIF 33.4

HV-G51

Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
GPS E	B	G	I1~E4	E5~E12	21~61	VIF 38.9 SIF 33.4

HV-G50

Destination	Signal format		VHF		UHF	Remarks MHz
	VHF	UHF	L	H		
GPS H	B	G	I1~E4	E5~E12	21~69	VIF 38.9 SIF 33.4
DIP H	D	K	1~5	6~12	13~57	VIF 38.0
		I	2~4	5~12	21~69	SIF 31.5 (32.0)(1)

Tuner AGC : 72±3dB (VHF, UHF)

S/N Ratio

Video (SP mode) : (Test tape MVP-08(PB), MVP-09(PB), TPV-RC-120(R/P))

Signal	PB	R/P
Y-Signal	More than 42dB	More than 44.5dB
Chrominance -Signal(AM)	More than 38dB	More than 42dB
Chrominance -Signal(PM)	More than 36dB	More than 38dB

Audio (SP mode) : More than 40dB

Audio Frequency Response: 200Hz~6kHz (±4dB)
(SP mode,
Test tape A-BEX TPV-160S)

Horizontal Resolution : More than 230 lines (PB., R/P)
(Test tape TTV-06T)

Erase Ratio : More than 55dB

Bias Frequency : 70kHz±10%

Tape speed : 23.39mm/sec±0.5%
(SP mode)

Wow & Flutter : Less than 0.4%
(Test tape TTV-P5,
CCIR WTD)

F.F time : Less than 290sec (E-240)

REW time : Less than 290sec (E-240)

Back tension : 46.5±12g-cm

Loading : Less than 3sec

Unloading : Less than 3.5sec

REF.NO.	PART NO.	DESCRIPTION
C201	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C202	*87-010-263-010	CAP,ELECT 100-10
C2C4	*87-010-401-010	CAP,ELECT 1-50 SME
C205	*87-010-374-010	CAP,ELECT 47-10
C206	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C207	*87-010-405-010	CAP,ELECT 10-50 SME
C208	*87-010-615-010	CAP,ELECT 2.2-50 BP
C209	*87-010-405-010	CAP,ELECT 10-50 SME
C210	*87-010-405-010	CAP,ELECT 10-50 SME
C211	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C212	*87-010-401-010	CAP,ELECT 1-50 SME
C213	*87-010-401-010	CAP,ELECT 1-50 SME
C214	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C215	*87-010-401-010	CAP,ELECT 1-50 SME
C216	*87-010-401-010	CAP,ELECT 1-50 SME
C217	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C218	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C219	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C220	*87-010-263-010	CAP,ELECT 100-10
C221	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C222	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C223	*87-010-265-010	CAP,ELECT 33-16 SME
C224	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C225	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C226	*87-010-545-010	CAP,ELECT 0.22-50 SME
C227	*87-010-263-010	CAP,ELECT 100-10
C228	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C229	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C230	*87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C231	*87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C232	*87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C233	*87-010-384-010	CAP,ELECT 100-25 SME
C234	*87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C235	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C236	*87-010-263-010	CAP,ELECT 100-10
C237	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C238	*87-010-263-010	CAP,ELECT 100-10 (EXCEPT G51GPSE)
C239	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y (EXCEPT G51GPSE)
C241	*87-010-405-010	CAP,ELECT 10-50 SME (EXCEPT G51GPSE)
C243	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C244	*87-018-209-010	CAP,CERA-SOL SS 0.1-50 F
C245	*87-010-384-010	CAP,ELECT 100-25 SME
C246	*87-010-544-010	CAP,ELECT 0.1-50 (EXCEPT G51GPSE)
C247	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C248	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
L201	*87-005-204-010	COIL,47UH
L202	*87-005-204-010	COIL,47UH(EXCEPT G51GPSE)
L203	*87-006-189-010	COIL,220UH EL0909
L204	*87-006-189-010	COIL,220UH EL0909
⚠R254	*87-029-082-010	RES,FUSE 100-1/4W
⚠R266	*87-029-361-010	RES,FUSE 3.3-1/2W
⚠R282	*87-029-361-010	RES,FUSE 3.3-1/2W
SFR201	87-024-277-010	SFR,220K
SFR202	87-024-277-010	SFR,220K
X201	*87-030-185-010	CERAMIC RESONATOR KBR6.0MES
X202	*87-030-179-010	CERAMIC RESONATOR KBR-4.0MES (EXCEPT G51GPSE)

=== PRE AMP/AUDIO CIRCUIT BOARD SECTION ===

REF.NO.	PART NO.	DESCRIPTION
C601	*87-010-248-010	CAP,ELECT 220-10 SME
C602	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C603	*87-010-260-010	CAP,ELECT 47-25 SME
C604	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C606	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C610	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C611	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C612	*87-015-695-010	CAP,ELECT 1-50
C613	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C614	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C615	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C616	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C617	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C618	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C630	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C631	*87-018-115-010	CAP,CERA-SOL SS 47P-50 SL
C632	*87-018-123-010	CAP,CERA-SOL SS 220P-50 B
C633	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C635	*87-018-149-010	CAP,CERA-SOL SS 15P-50 SL
C636	*87-018-119-010	CAP,CERA-SOL SS 100P-50 B
C637	*87-018-125-010	CAP,CERA-SOL SS 330P-50 B
C702	*87-018-123-010	CAP,CERA-SOL SS 220P-50 B
C703	*87-015-684-010	CAP,ELECT 47-16
C704	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C705	*87-018-134-010	CAP,CERA-SOL SS 0.01-16 Y
C706	*87-015-687-010	CAP,ELECT 33-25
C707	*87-010-384-010	CAP,ELECT 100-25 SME
C708	*87-018-205-010	CAP,CERA-SOL SS 0.022-25 F
C709	*87-010-403-010	CAP,ELECT 3.3-50 SME
C710	*87-010-404-010	CAP,ELECT 4.7-50 SME
C712	*87-010-402-010	CAP,ELECT 2.2-50 SME
C717	*87-018-197-010	CAP,CERA-SOL SS 180P-16 X
C718	*87-010-404-010	CAP,ELECT 4.7-50 SME
C719	*87-018-119-010	CAP,CERA-SOL SS 100P-50 B
C720	*87-010-182-010	CAP,ELECT 22-25 SME
C722	*87-015-695-010	CAP,ELECT 1-50
C723	*87-018-133-010	CAP,CERA-SOL SS 4700P-16 X
C724	*87-018-131-010	CAP,CERA-SOL SS 1000P-50 B
C725	*87-015-676-010	CAP,ELECT 47-6.3
C726	*87-015-695-010	CAP,ELECT 1-50
C727	*87-018-209-010	CAP,CREA-SOL SS 0.1-50 F
C732	*87-018-209-010	CAP,CREA-SOL SS 0.1-50 F
C734	*87-018-133-010	CAP,CERA-SOL SS 4700P-16 X
L601	*87-005-196-010	COIL,10UH
L602	*87-005-208-010	COIL,100UH
L630	*87-003-149-010	COIL,47UH
L631	*87-003-403-010	COIL,5.6UH LAL02
L632	*87-003-148-010	COIL,33UH
L633	*87-003-146-010	COIL,15UH LAL02
L634	*87-003-288-010	COIL,180UH LAL02
L701	*89-JU8-609-010	COIL,18MMH
L702	*87-003-152-010	COIL,100UH
SFR701	87-024-276-010	SFR,100K
T701	*89-JU8-610-010	COIL,OSC BIAS-70K

=== TIMER CIRCUIT BOARD SECTION ===

C901	*87-015-682-010	CAP,ELECT 22-16
C902	*87-015-682-010	CAP,ELECT 22-16
C903	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C904	*87-015-682-010	CAP,ELECT 22-16
C905	*87-018-208-010	CAP,CERA-SOL SS 0.047-50 F
C906	*87-018-150-010	CAP,CERA-SOL SS 18P-50 CH
C907	*87-015-687-010	CAP,ELECT 33-25
C909	*87-018-147-010	CAP,CERA-SOL SS 10P-50 CH

REF.NO.	PART NO.	DESCRIPTION
D939	87-001-824-010	LED LT3S47B(AUTO TRACKING) (EXCEPT G51GPSE)
FL901	89-JU5-621-010	FL,9-LT-20GK(DISPLAY)
J901	*87-009-206-010	PIN JACK(AUDIO/VIDEO IN)
L901	*87-003-152-010	COIL 100UH
L902	*87-003-152-010	COIL 100UH
RV901	87-024-225-010	VOLUME 250KB(TRACKING)
RV902	87-024-224-010	VOLUME 10KB(PICTURE)
SW902	87-036-186-010	TACT SW(EJECT)
SW903	87-036-186-010	TACT SW(STOP)
SW904	87-036-186-010	TACT SW(PLAY)
SW905	87-036-186-010	TACT SW(REW)
SW906	87-036-186-010	TACT SW(F.FWD)
SW907	87-036-186-010	TACT SW(NOISE CANCEL,PAUSE/STILL)
SW908	87-036-186-010	TACT SW(RECORD)
SW909	87-036-186-010	TACT SW(QTR)
SW910	87-036-186-010	TACT SW(TIMER REC)
SW911	87-036-186-010	TACT SW(COUNTER RESET)
SW912	87-036-186-010	TACT SW(COUNTER MEMORY)
SW914	87-036-186-010	TACT SW(CLOCK/COUNTER)
SW915	87-036-186-010	TACT SW(CHECK/PRGM)
SW916	87-036-186-010	TACT SW(NEXT)
SW917	87-036-186-010	TACT SW(CLEAR)
SW918	87-036-186-010	TACT SW(TIME SET)
SW919	87-036-186-010	TACT SW(CHANNEL UP)
SW920	87-036-186-010	TACT SW(CHANNEL DOWN)
SW921	87-036-186-010	TACT SW(RESET)
SW922	87-036-186-010	TACT SW(CH-10)
SW923	87-036-186-010	TACT SW(CH-1)
SW924	87-036-186-010	TACT SW(TUNING +)
SW925	87-036-186-010	TACT SW(TUNING -)
SW926	87-036-186-010	TACT SW(INPUT SELECT)
SW929	87-036-186-010	TACT SW(BAND)
SW930	87-036-178-010	SLIDE SW (AUTO TRACKING) (EXCEPT G51GPSE)
SW931	87-036-186-010	TACT SW(TEST)
TC901	*87-011-220-010	CAP,TRIMMER 20P
X901	*87-030-184-010	CERAMIC RESONATOR KBR4.19MES
X902	*81-766-654-010	XTAL RESONATOR DT-38

=== POWER SW CIRCUIT BOARD SECTION ===

D938	87-001-123-010	LED SLZ-981C-02(POWER)
SW901	87-036-186-010	TACT SW(POWER)
X903	*87-030-189-010	PIEZO RESONATOR PKM22EPP

=== RELAY CIRCUIT BOARD-1 SECTION ===

=== RELAY CIRCUIT BOARD-2 SECTION ===

=== RELAY CIRCUIT BOARD-3 SECTION ===

=== RELAY CIRCUIT BOARD-4 SECTION ===

=== AUDIO/VIDEO JACK CIRCUIT BOARD SECTION (EXCEPT G50GPSH,G50D1PH)

CN411	87-009-205-010	CONNECTOR,21P(AUDIO/VIDEO)

=== BASE CIRCUIT BOARD SECTION ===

PCB-K	*S8-059-133-020	BASE PCB ASSY(W/MODE SW)

REF.NO.	PART NO.	DESCRIPTION
CP1	S6-808-080-030	PHOTO(REEL) SENSOR ON1335

=== RELAY CIRCUIT BOARD-5 SECTION ===

PCB-L	*S8-059-013-470	RELAY PCB-5 ASSY

=== RELAY CIRCUIT BOARD-6 SECTION ===

PCB-M	*S8-059-013-050	RELAY PCB-6 ASSY

=== SWITCH CIRCUIT BOARD SECTION ===

PCB-N	*S8-059-163-200	SWITCH PCB ASSY(W/SW1,2,3)

=== START SENSOR CIRCUIT BOARD SECTION ===

PCB-O	*S8-059-163-010	SENSOR PCB RM ASSY

=== END SENSOR CIRCUIT BOARD SECTION ===

PCB-P	*S8-059-163-160	SENSOR PCB LM ASSY

=== LED CIRCUIT BOARD SECTION ===

LED1	*S8-059-133-030	LED ASSY(W/PCB-Q)

=== ACE HEAD CIRCUIT BOARD SECTION ===

ACEH	S6-204-150-080	ACE HEAD HV224206(W/PCB-R)

=== FRAME HEAD CIRCUIT BOARD SECTION ===

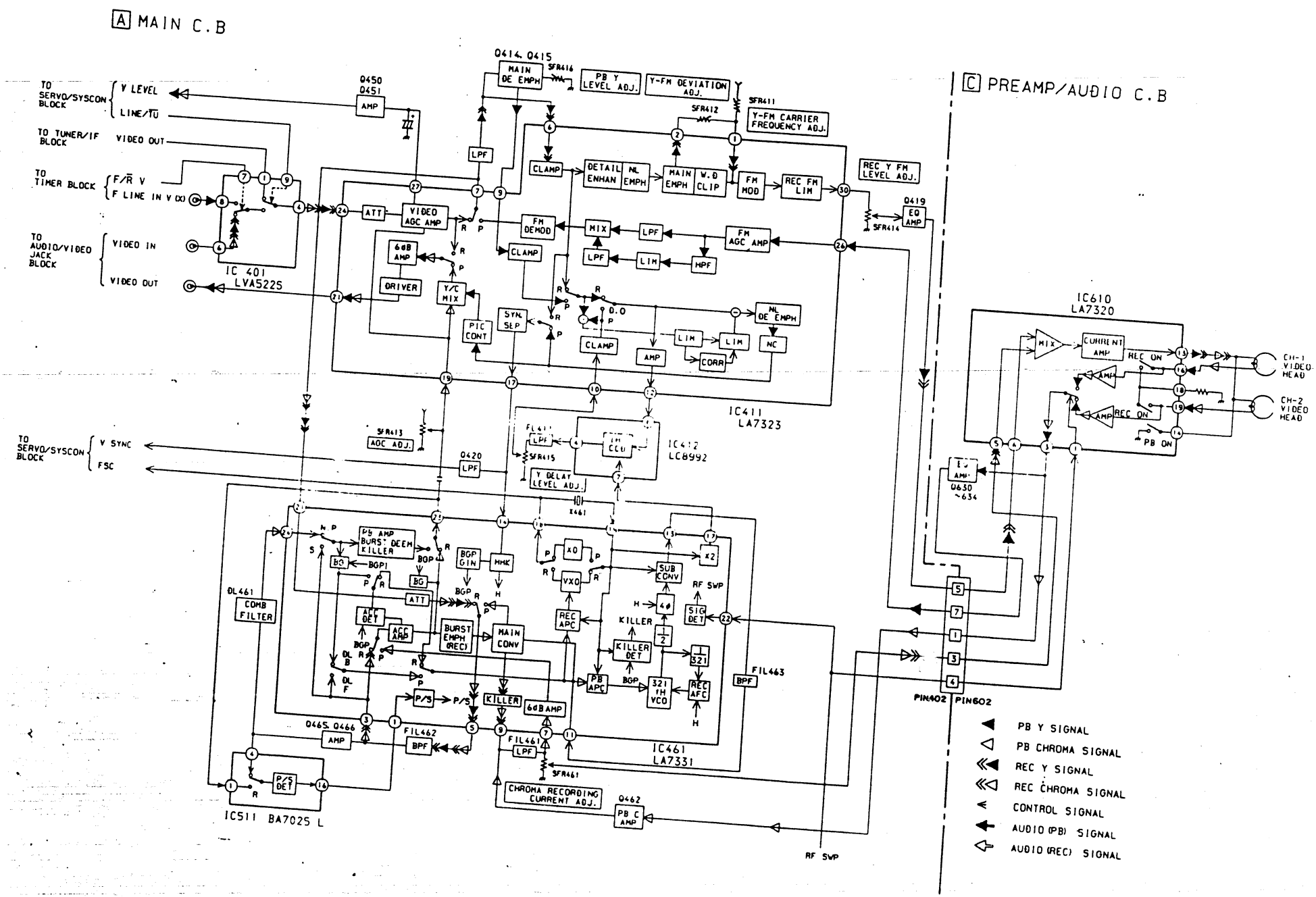
FEH	S6-204-150-090	FRAME HEAD HV224206(W/PCB-S)

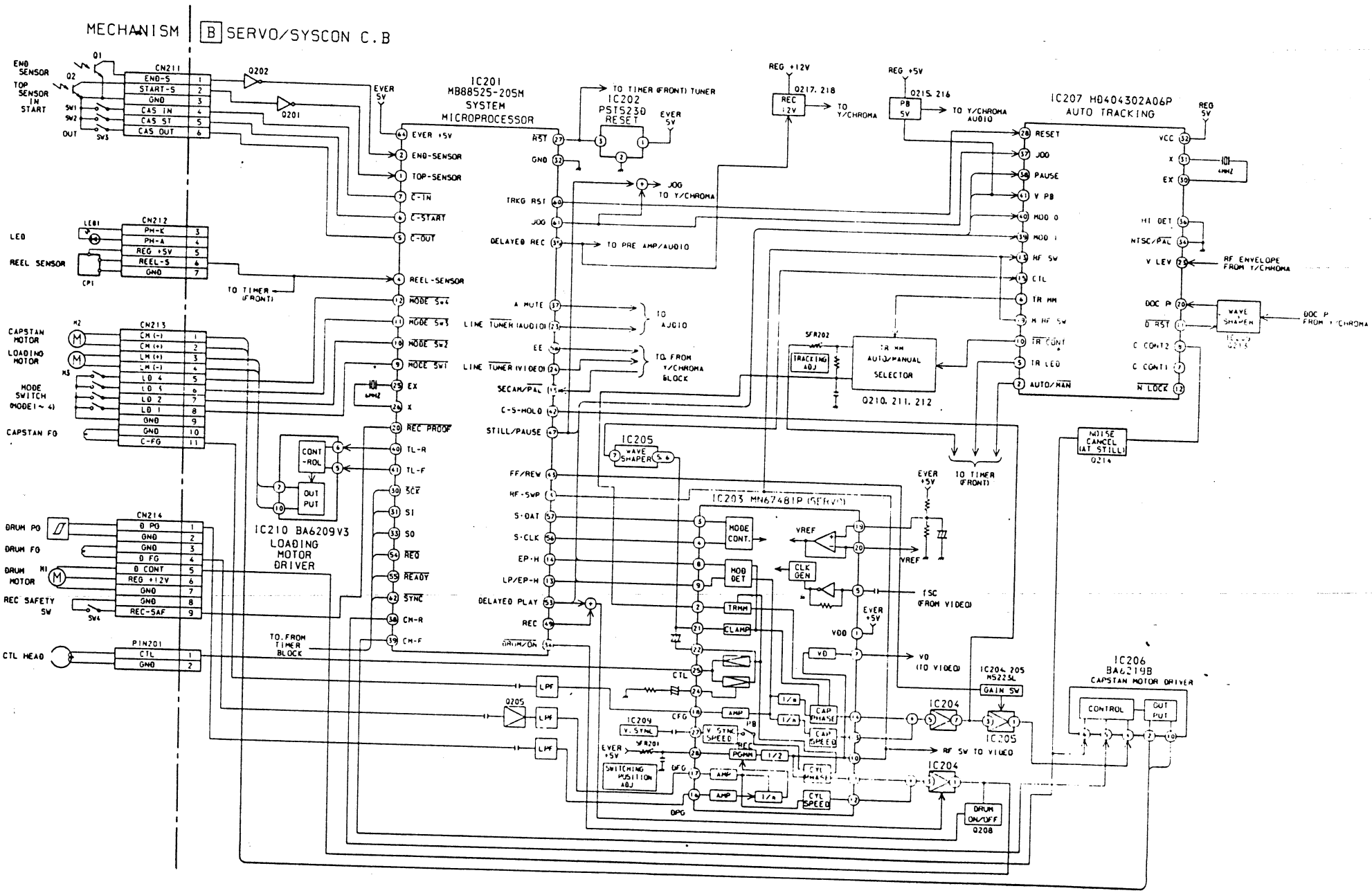
=== [illegible] CIRCUIT BOARD [illegible] ===

[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	*S0-05C-001-010	[illegible]
[illegible]	[illegible]	[illegible]

=== POWER CIRCUIT BOARD-2 SECTION ===

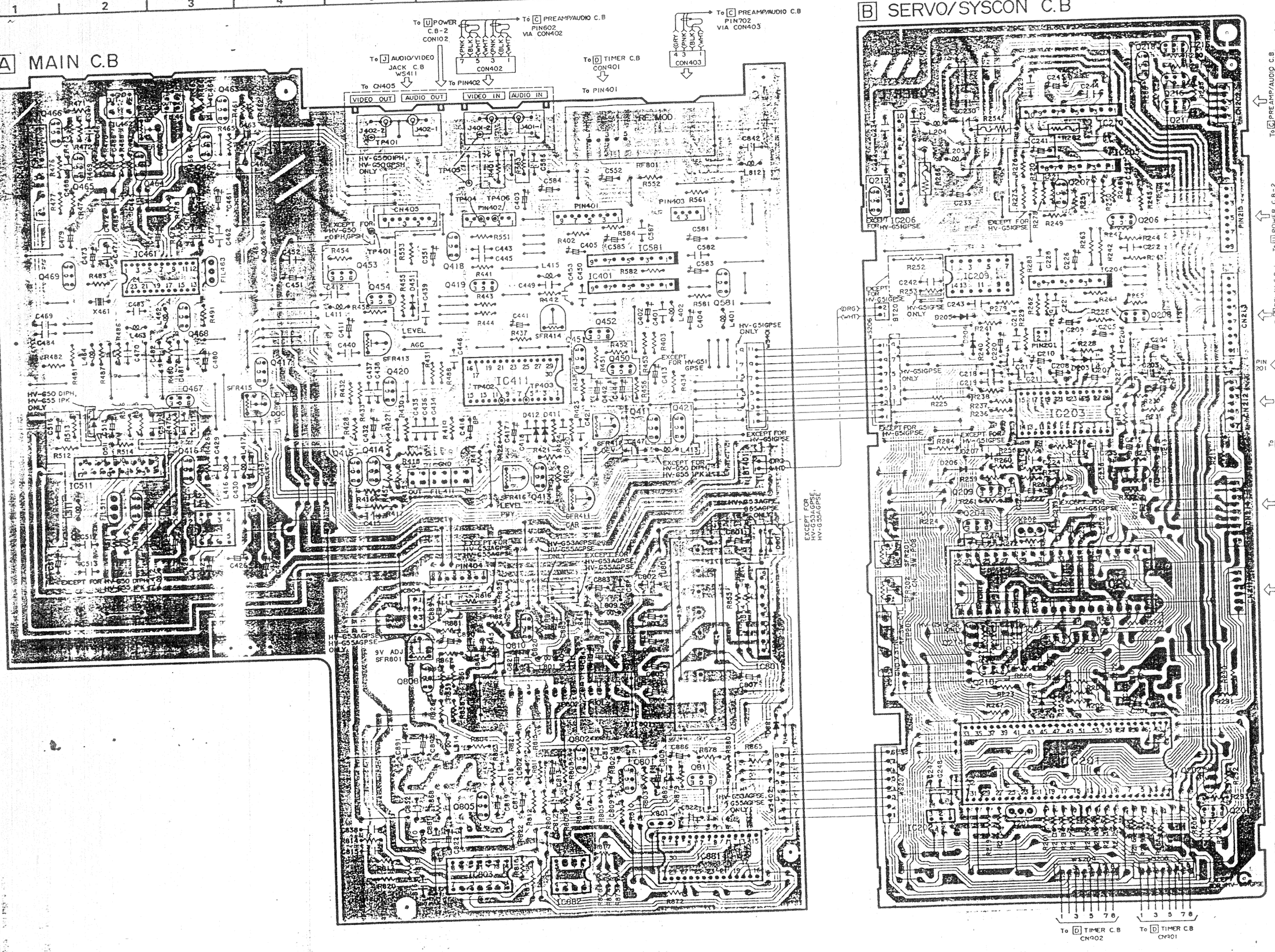
[illegible]	*S0-5EC-010-210	CAP,CERA 4700P-250V (EXCEPT G50D1PH,G50GPSH)
C102	*S0-05C-010-210	CAP,CERA 2200P-250V (G50D1PH,G50GPSH ONLY)
C104	*S0-05C-001-040	CAP,ELECT 82-400V
C105	*S0-05C-001-050	CAP,FILM 0.047-630V
C106	*S0-05C-001-060	CAP,CERA 100P-1KV
C107	*S0-05C-001-070	CAP,ELECT 1-400V
C202	*87-010-053-010	CAP,ELECT 1-50V
C203	*S0-05C-002-030	CAP,ELECT 680-25V
C204	*87-010-050-010	CAP,ELECT 470-25V
C205	*S0-05C-002-030	CAP,ELECT 680-25V
C206	*S0-05C-002-060	CAP,ELECT 100-10V
C207	*87-010-050-010	CAP,ELECT 470-25V
C208	*87-010-235-010	CAP,ELECT 470-16V
C210	*87-010-268-010	CAP,ELECT 100-10V
C211	*87-010-268-010	CAP,ELECT 100-10V
L201	*S0-05L-002-010	COIL,40UH 1A
L202	*S0-05L-002-010	COIL,40UH 1A
PC101	S0-05P-C01-010	PHOTO ON3171R
R101	*S0-05R-001-010	RES,WIRE WOUND 2.2 3W
R102	*S0-05R-001-020	RES,MF 47K 3W
R105	*S0-05R-001-050	RES,MFO 27 1W
R106	*S0-05R-001-060	RES,MFO 39 1W
⚠R107	*87-029-034-010	RES,FUSE 120 1/2W
R203	*87-025-306-010	RES,MF 5.6K 1/2W
R205	*87-025-403-010	RES,MF 1.0K 1/4W
R214	*87-025-245-010	RES,MFO 820 1W
SFR201	*S0-05R-V02-010	SFR,500

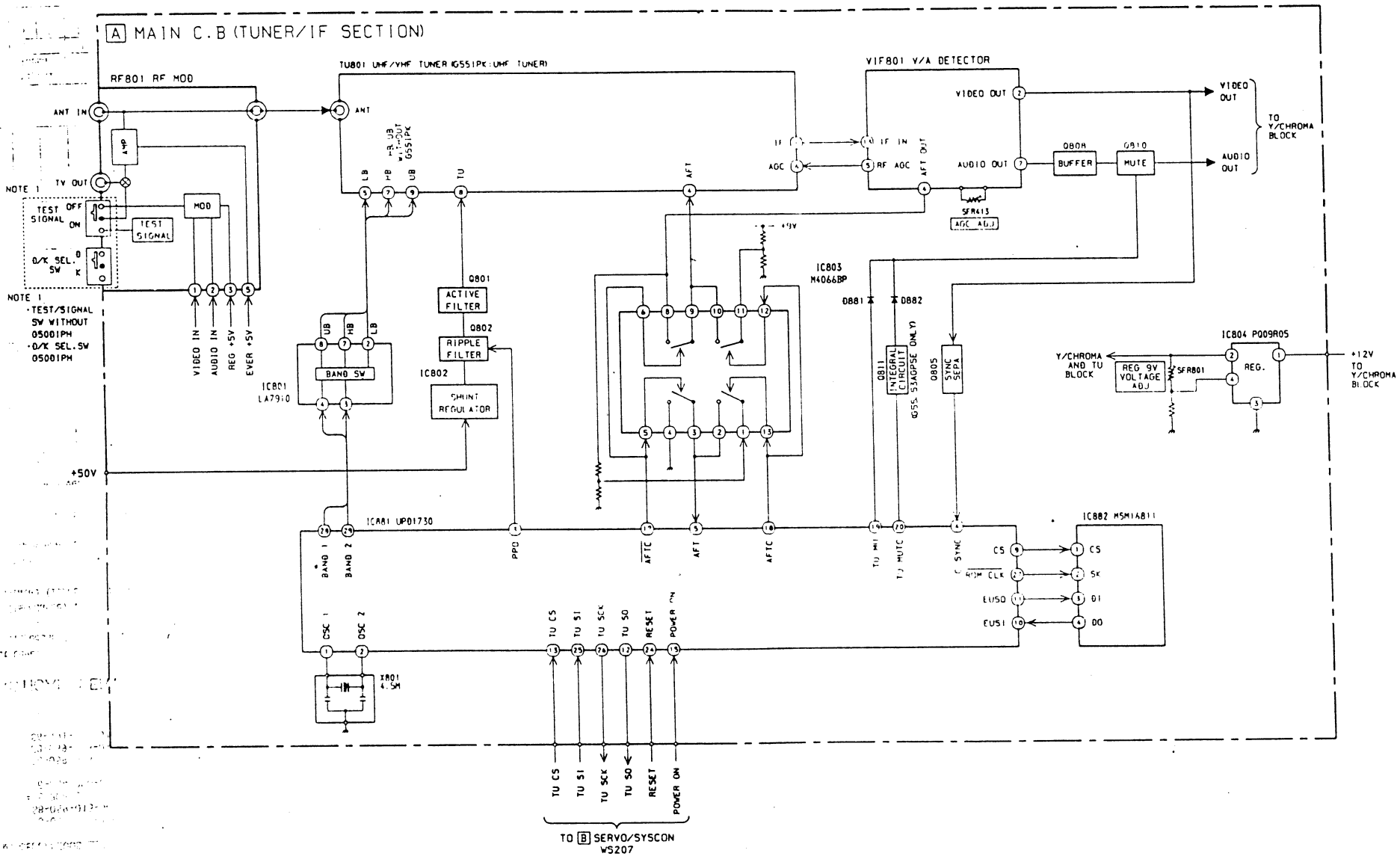

A MAIN C.B
C PREAMP/AUDIO C.B
TO SERVO/SYSCON BLOCK
V LEVEL
LINE/TU
TO TUNER/IF BLOCK
VIDEO OUT
TO TIMER BLOCK
F/R V
F LINE IN V (X)
TO AUDIO/VIDEO JACK BLOCK
VIDEO IN
VIDEO OUT
IC 401 LVA5225
Q450 Q451
AMP
Q414, Q415
MAIN DE EMPH
SFR416
PB Y LEVEL ADJ.
Y-FM DEVIATION ADJ.
SFR411
SFR412
Y-FM CARRIER FREQUENCY ADJ.
REC Y FM LEVEL ADJ.
LPF
CLAMP
DETAIL ENHAN
NL EMPH
MAIN EMPH
W.D CLIP
FM MOD
REC FM LIM
ATT
VIDEO AGC AMP
FM DEMOD
MIX
FM AGC AMP
6dB AMP
DRIVER
Y/C MIX
PIC CONT
SYNC SEP
HPF
LIM
CORR
NC
AMP
IC411 LA7323
SFR413
AGC ADJ.
IC412 LC8992
SFR415
Y DELAY LEVEL ADJ.
Q420
TO SERVO/SYSCON BLOCK
V SYNC
FSC
DL461
COMB FILTER
BURST DEEM KILLER
BGP GIN
MMK
SUB CONV
VXO
REC APC
MAIN CONV
BURST EMPH (REC)
ACC AMP
ACC DET
KILLER
KILLER DET
SIG DET
RF SWP
PB APC
321 fH VCO
REC AFC
FIL463
BPF
FIL462
FIL461
Q465, Q466
IC461 LA7331
SFR461
CHROMA RECORDING CURRENT ADJ.
Q462
PB C AMP
IC511 BA7025 L
P/S DET
IC610 LA7320
MIX
CURRENT AMP
REC ON
PB ON
CH-1 VIDEO HEAD
CH-2 VIDEO HEAD
EQ AMP
Q630 ~634
PIN602
PIN602
PB Y SIGNAL
PB CHROMA SIGNAL
REC Y SIGNAL
REC CHROMA SIGNAL
CONTROL SIGNAL
AUDIO (PB) SIGNAL
AUDIO (REC) SIGNAL

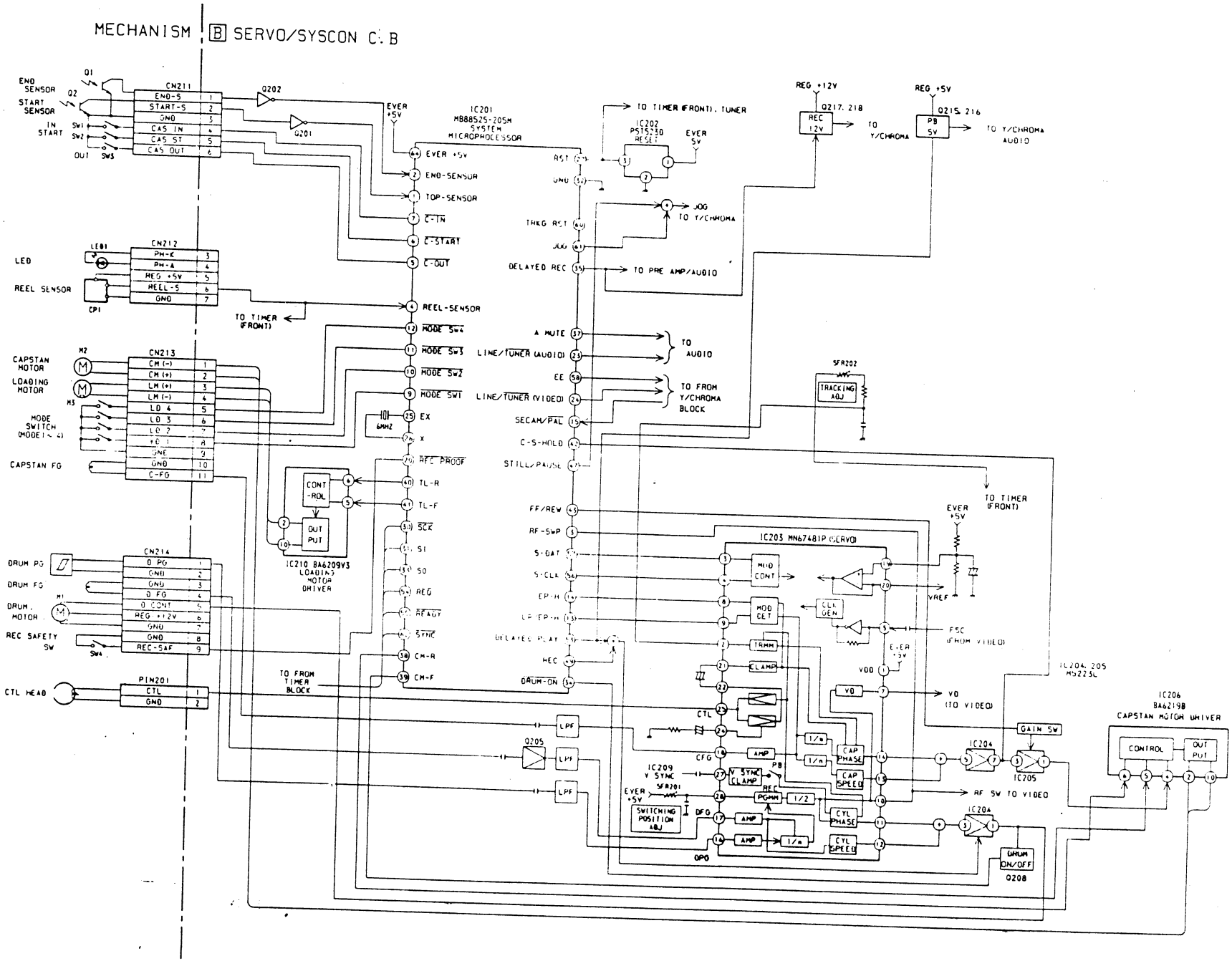

MECHANISM
B SERVO/SYSCON C.B
IC201
MB88525-205M
SYSTEM
MICROPROCESSOR
IC202
PST5230
RESET
IC207 H0404302A06P
AUTO TRACKING
IC210 BA6209V3
LOADING
MOTOR
DRIVER
IC205
WAVE SHAPER
IC203 MN6748IP (SERVO)
IC204
IC206
BA6219B
CAPSTAN MOTOR DRIVER
CN211
CN212
CN213
CN214
PIN201
END SENSOR
TOP SENSOR IN START
LED
REEL SENSOR
CAPSTAN MOTOR
LOADING MOTOR
MODE SWITCH
CAPSTAN FG
DRUM PG
DRUM FG
DRUM MOTOR
REC SAFETY SW
CTL HEAD
TO TIMER (FRONT)
TO Y/CHROMA
TO PRE AMP/AUDIO
TO AUDIO
TO FROM Y/CHROMA BLOCK
TO FROM TIMER BLOCK
AUTO/MANUAL SELECTOR
Q210, 211, 212
RF ENVELOPE FROM Y/CHROMA
DOC P FROM Y/CHROMA
NOISE CANCEL (AT STILL)
Q214
RF SW TO VIDEO
fSC (FROM VIDEO)
VO (TO VIDEO)
DRUM ON/OFF
Q208

A MAIN C.B

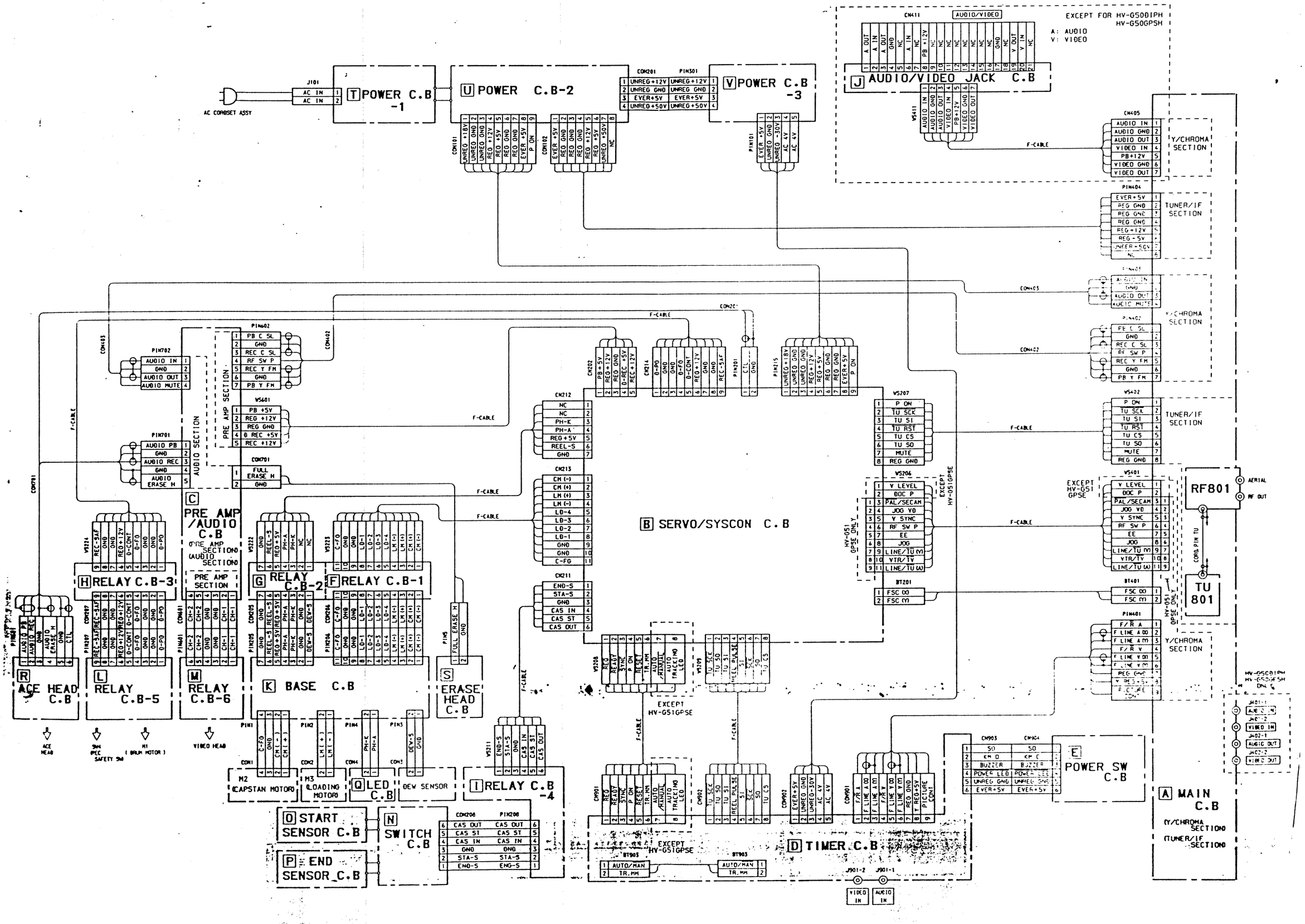
B SERVO/SYSCON C.B

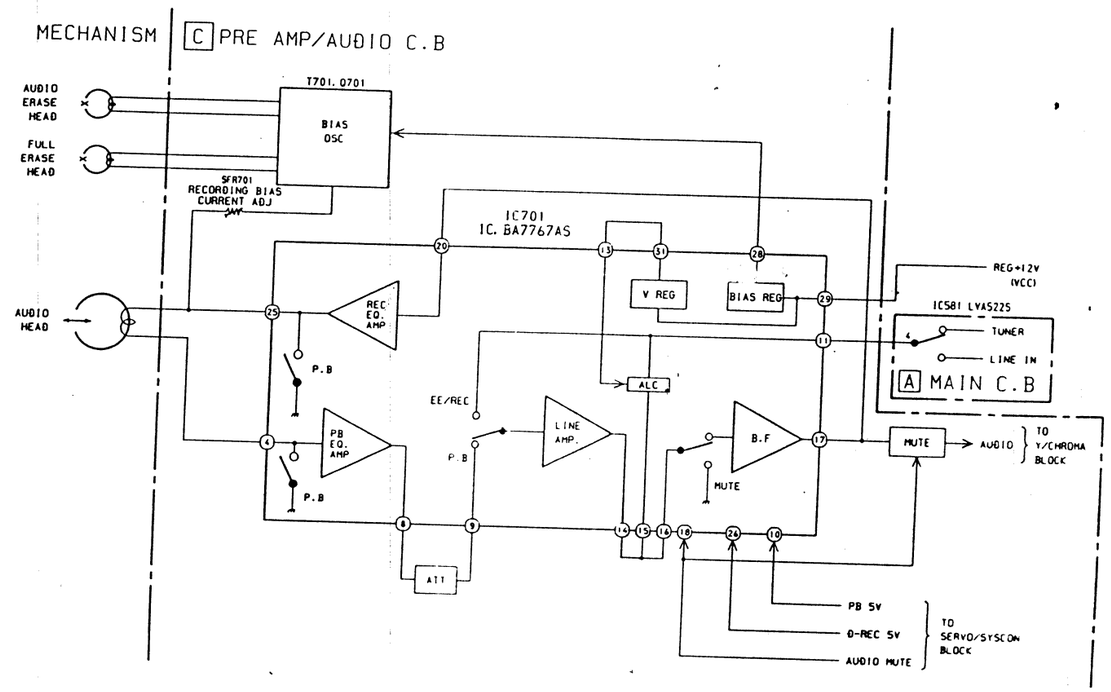


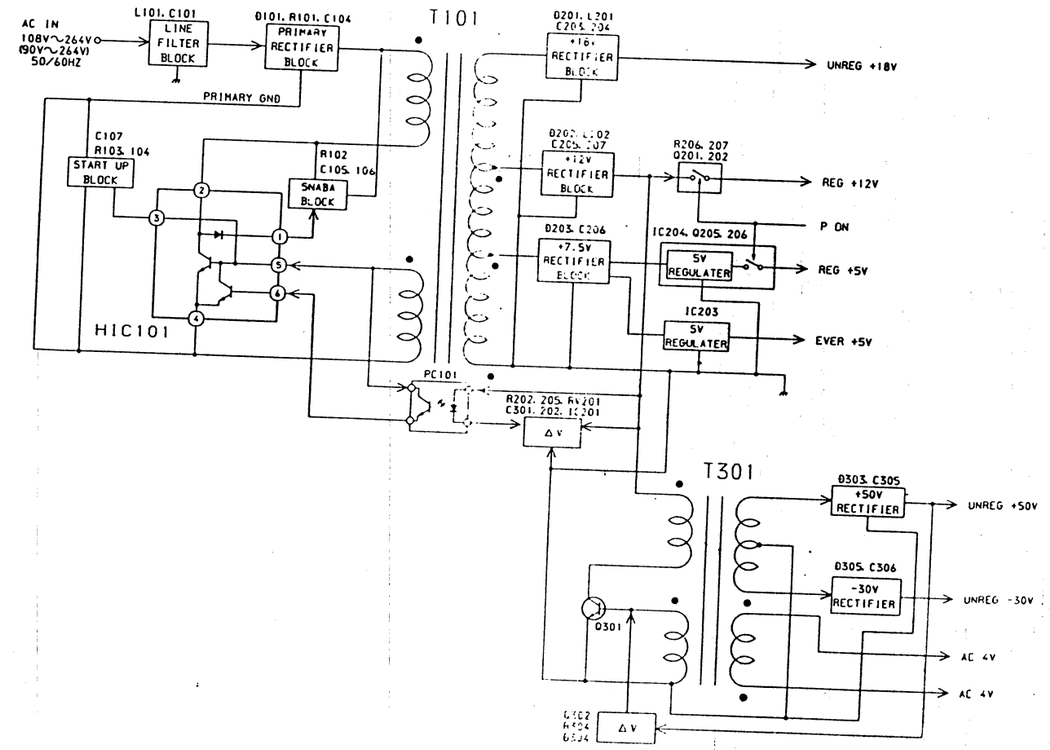

A MAIN C.B (TUNER/IF SECTION)
RF801 RF MOD
ANT IN
TV OUT
AMP
MOD
TEST SIGNAL
TEST SIGNAL OFF ON
O/K SEL. SW O K
NOTE 1
NOTE 1
·TEST SIGNAL SW WITHOUT 05001PH
·O/K SEL.SW 05001PH
VIDEO IN
AUDIO IN
REG +5V
EVER +5V
TU801 UHF/VHF TUNER (G551PK:UHF TUNER)
ANT
LB
HB
UB
TU
AFT
AGC
IF
RF AGC
AFT OUT
VIF801 V/A DETECTOR
IF IN
VIDEO OUT
AUDIO OUT
Q808 BUFFER
Q810 MUTE
VIDEO OUT
AUDIO OUT
TO Y/CHROMA BLOCK
SFR413 AGC ADJ
+9V
IC803 M4066BP
D881
D882
Q811 INTEGRAL CIRCUIT G551PK:G551QPSE ONLY
Q805 SYNC SEPA
IC804 PQ09RD5
REG.
REG 9V VOLTAGE ADJ
SFR801
Y/CHROMA AND TU BLOCK
+12V TO Y/CHROMA BLOCK
Q801 ACTIVE FILTER
Q802 RIPPLE FILTER
IC802 SHUNT REGULATOR
IC801 LA7910
BAND SW
UB
HB
LB
+50V
IC881 UPD1730
BAND 1
BAND 2
PPD
AFTC
AFT
AFTC
TU MUTE
C SYNC
IC882 M5M1A811
CS
SK
DI
DO
EUSO
EUSI
OSC 1
OSC 2
XR01 4.5M
TU CS
TU SI
TU SCK
TU SO
RESET
POWER ON
TO B SERVO/SYSCON WS207


MECHANISM
B SERVO/SYSCON C. B
END SENSOR
START SENSOR
IN START
OUT
CN211
END-S
START-S
GND
CAS IN
CAS ST
CAS OUT
Q202
Q201
EVER +5V
IC201
M88525-205M
SYSTEM
MICROPROCESSOR
IC202
PST5230
RESET
TO TIMER (FRONT), TUNER
REG +12V
REC 12V
Q217, 218
TO Y/CHROMA
REG +5V
PB 5V
Q215, 216
TO Y/CHROMA AUDIO
LED
REEL SENSOR
CN212
PH-E
PH-A
REG +5V
REEL-S
GND
TO TIMER (FRONT)
REEL-SENSOR
JOG
TO Y/CHROMA
DELAYED REC
TO PRE AMP/AUDIO
CAPSTAN MOTOR
LOADING MOTOR
MODE SWITCH (MODE1 ~ 4)
CAPSTAN FG
CN213
CM (-)
CM (+)
LM (+)
LM (-)
LD 4
LD 3
LD 2
LD 1
GND
C-FG
MODE SW4
MODE SW3
MODE SW2
MODE SW1
A MUTE
LINE/TUNER (AUDIO)
TO AUDIO
EE
LINE/TUNER (VIDEO)
TO FROM Y/CHROMA BLOCK
SECAM/PAL
C-S-HOLD
STILL/PAUSE
SFR202
TRACKING ADJ
TO TIMER (FRONT)
EX
X
REC PROOF
TL-R
TL-F
SCK
SI
SO
REQ
READY
SYNC
CM-R
CM-F
CONT -ROL
OUT PUT
IC210 BA6209V3
LOADING MOTOR DRIVER
FF/REW
RF-SWP
S-DAT
S-CLK
EP-H
LP-EP-H
DELAYED PLAY
REC
DRUM-ON
IC203 MN67481P (SERVO)
MIO CONT
MOD DET
CLK GEN
THMM
CLAMP
CTL
CFG
DFG
V SYNC
V SYNC CLAMP
PGMM
AMP
1/n
1/2
CAP PHASE
CAP SPEED
CYL PHASE
CYL SPEED
SWITCHING POSITION ADJ
SFR201
OPO
EVER +5V
VREF
FSC (FROM VIDEO)
VDD
VO
VO (TO VIDEO)
IC204, 205
M5223L
IC204
IC205
GAIN SW
RF SW TO VIDEO
IC206
BA6219B
CAPSTAN MOTOR DRIVER
CONTROL
OUT PUT
DRUM ON/OFF
Q208
DRUM PG
DRUM FG
DRUM MOTOR
REC SAFETY SW
CN214
D PG
GND
GND
D FG
D CONT
REG +12V
GND
GND
REC-SAF
CTL HEAD
PIN201
CTL
GND
TO FROM TIMER BLOCK
Q205
LPF

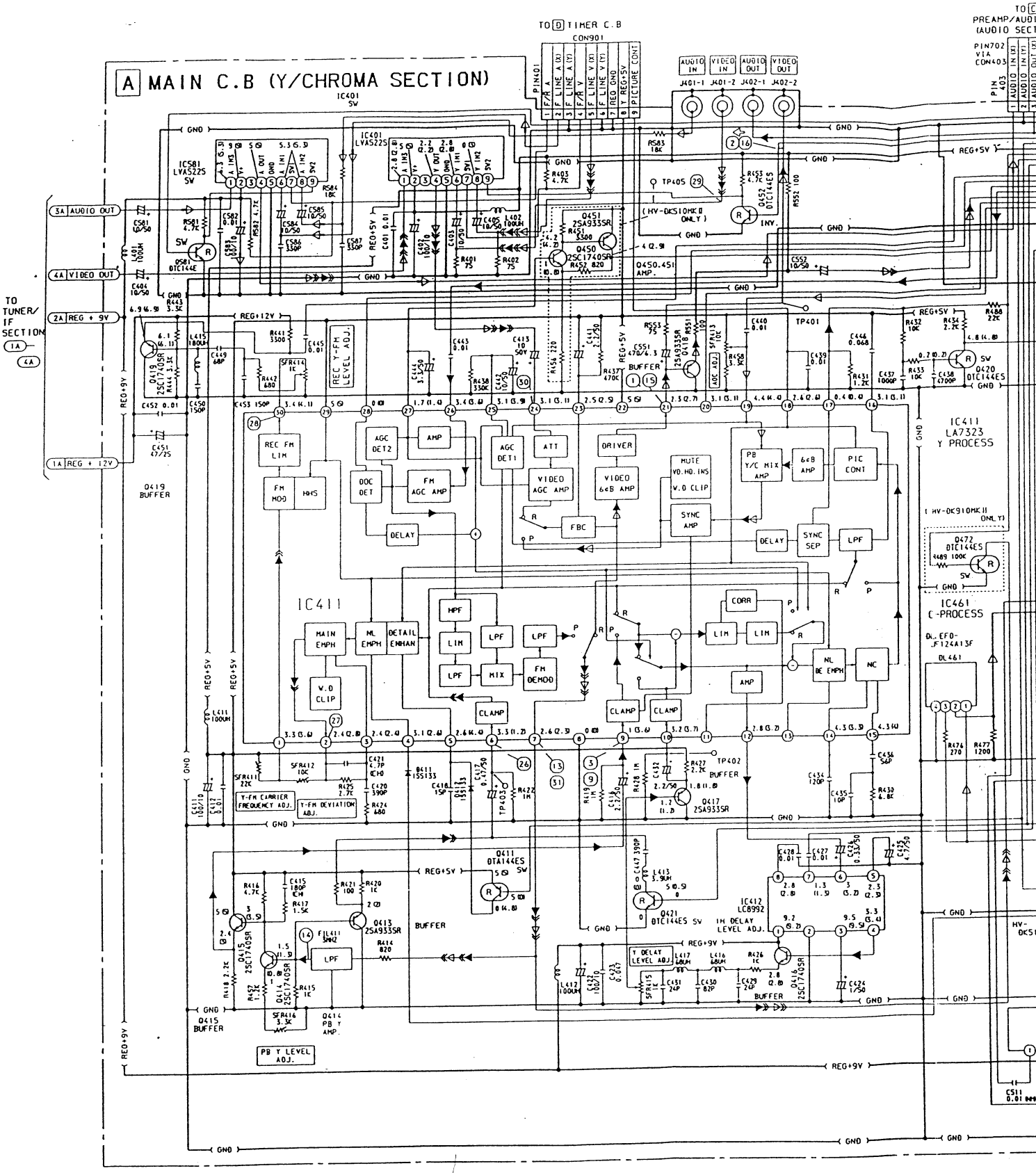
WIRE HARNESS DIAGRAM

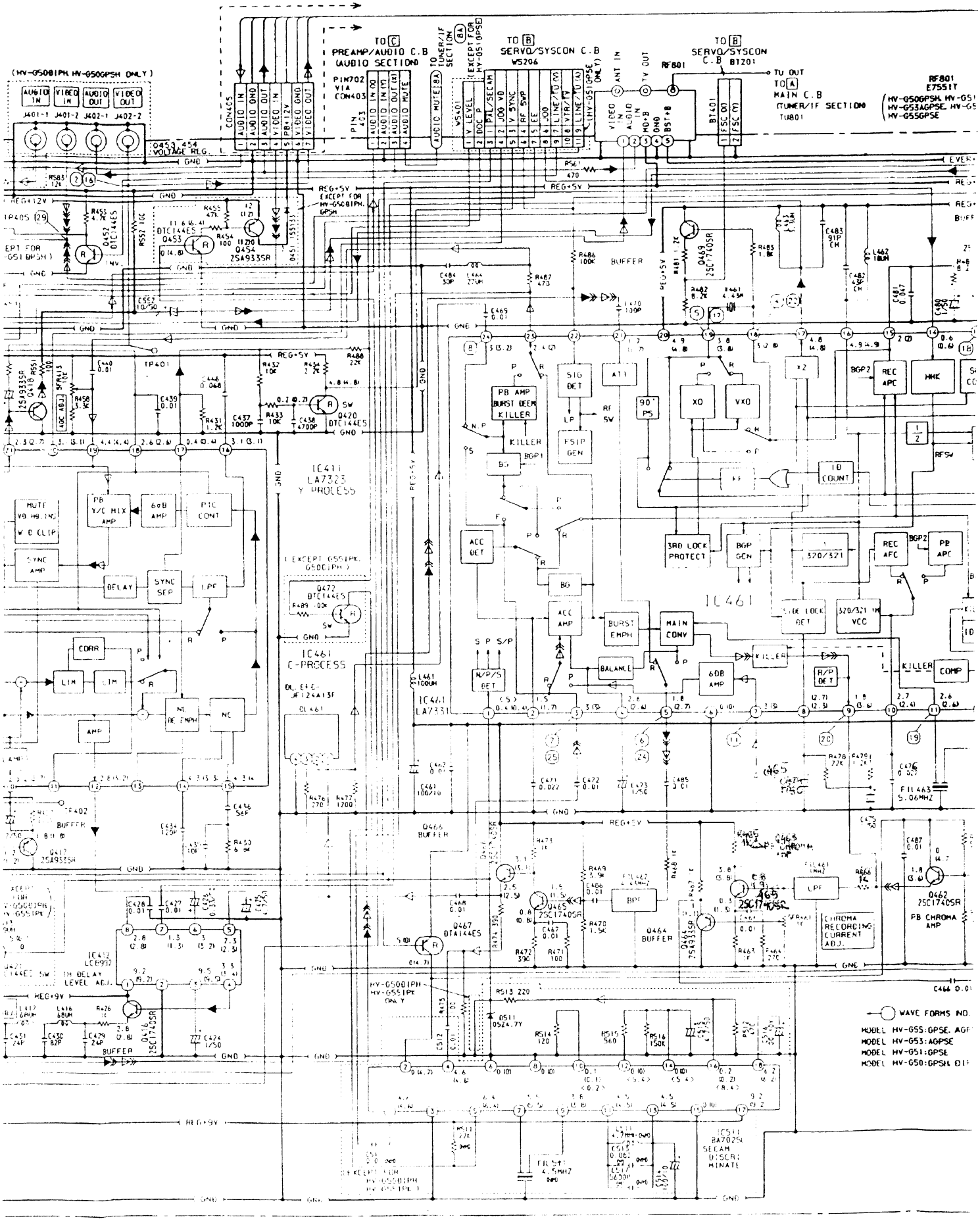


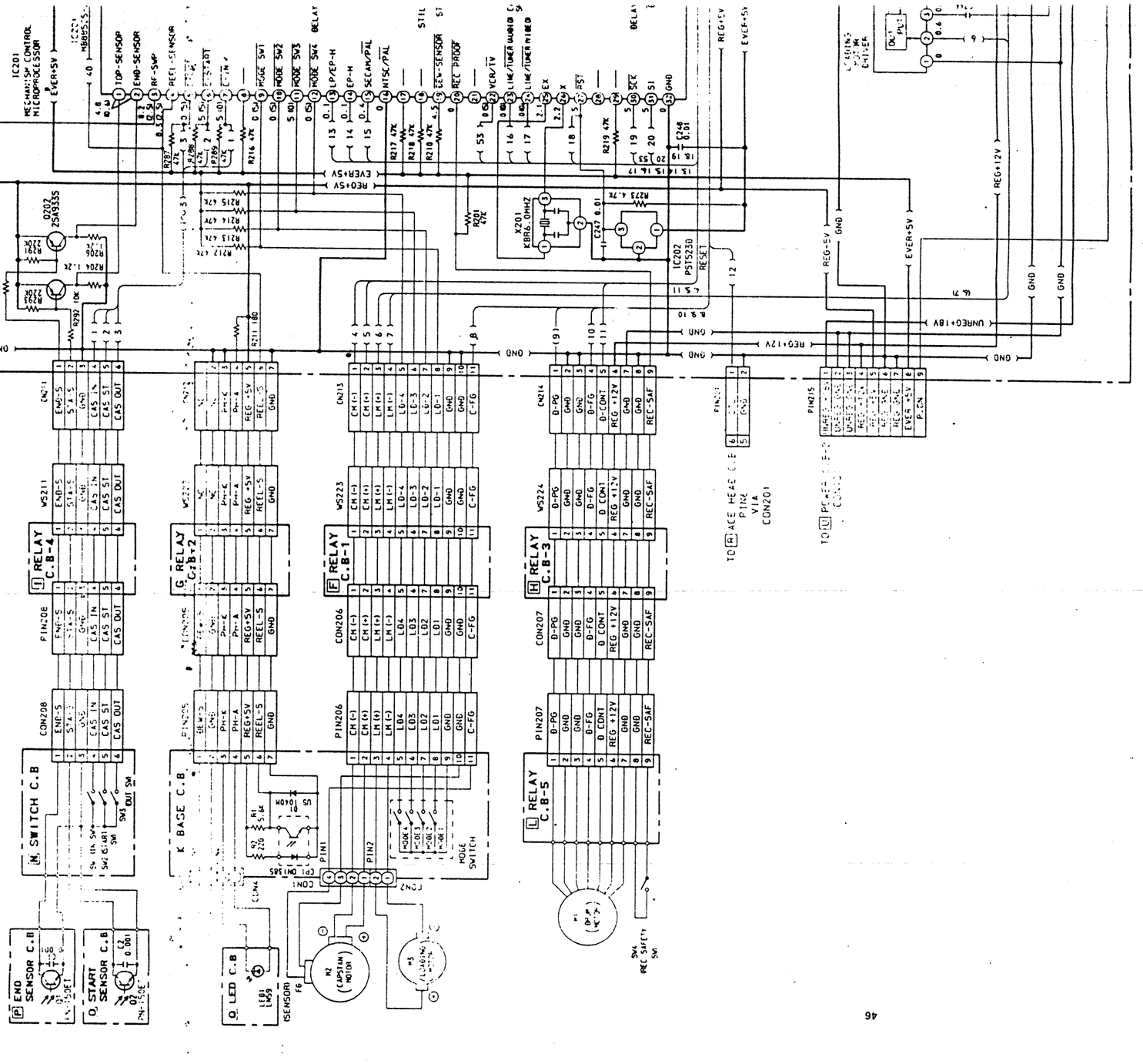

MECHANISM
C PRE AMP/AUDIO C.B
AUDIO ERASE HEAD
FULL ERASE HEAD
AUDIO HEAD
T701, Q701
BIAS OSC
SFR701 RECORDING BIAS CURRENT ADJ
IC701 IC. BA7767AS
REC EQ. AMP
P.B
PB EQ. AMP
V REG
BIAS REG
ALC
EE/REC
LINE AMP.
B.F
MUTE
ATT
REG+12V (VCC)
IC581 LVA5225
TUNER
LINE IN
A MAIN C.B
AUDIO
TO Y/CHROMA BLOCK
PB 5V
0-REC 5V
AUDIO MUTE
TO SERVO/SYSCON BLOCK


AC IN
108V~264V
(90V~244V)
50/60HZ
L101, C101
LINE FILTER BLOCK
D101, R101, C104
PRIMARY RECTIFIER BLOCK
PRIMARY GND
T101
D201, L201
C203, 204
+18V RECTIFIER BLOCK
UNREG +18V
C107
R103, 104
START UP BLOCK
R102
C105, 106
SNABA BLOCK
HIC101
D202, L202
C205, 207
+12V RECTIFIER BLOCK
R206, 207
Q201, 202
REG +12V
P ON
D203, C206
+7.5V RECTIFIER BLOCK
IC204, Q205, 206
5V REGULATER
REG +5V
IC203
5V REGULATER
EVER +5V
PC101
R202, 205, RV201
C301, 202, L201
ΔV
T301
D303, C305
+50V RECTIFIER
UNREG +50V
D305, C306
-30V RECTIFIER
UNREG -30V
Q301
AC 4V
AC 4V
ΔV

SCHEMATIC DIAGRAM — 1 (VIDEO)



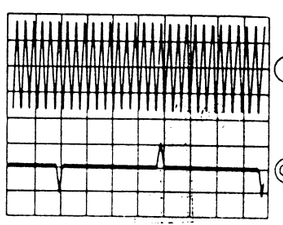

(HV-G50BIPH, HV-G50GPSH ONLY)
AUDIO IN
VIDEO IN
AUDIO OUT
VIDEO OUT
J401-1 J401-2 J402-1 J402-2
CON405
AUDIO IN
AUDIO GND
AUDIO OUT
VIDEO IN
PB+12V
VIDEO GND
VIDEO OUT
TO C
PREAMP/AUDIO C.B
(AUDIO SECTION)
PIN702
VIA
CON403
PIN 403
AUDIO IN (M)
AUDIO IN (Y)
AUDIO OUT (R)
AUDIO MUTE
TO TUNER/IF SECTION (8A)
AUDIO MUTE (8A)
(EXCEPT FOR HV-G51GPSH)
TO B
SERVO/SYSCON C.B
W5206
V LEVEL
DOC
PAL/SECAM
V SYNC
RF 5VP
EE
FSC (M)
VTR/TV (M)
LINE/TV (M)
(HV-G51GPSE ONLY)
VIDEO IN
ANT IN
TV OUT
AUDIO IN
GND
B+8
RF801
TO B
SERVO/SYSCON
C.B BT201
TU OUT
TO A
MAIN C.B
(TUNER/IF SECTION)
TU801
BT401
FSC (M)
RF801
E7551T
(HV-G50GPSH, HV-G51
HV-G53AGPSE, HV-G5
HV-G55GPSE
REG+12V
REG+5V
GND
REG+9V
VOLTAGE REG.
Q453,454
Q452 DTC144ES
Q453 DTC144ES
Q454 2SA933SR
Q451 1SS133
REG+5V EXCEPT FOR HV-G50BIPH, GPSH
TP405
TP401
TP402
BUFFER
Q469 2SC1740SR
Q420 DTC144ES
Q472 DTC144ES
Q417 2SA933SR
Q466 BUFFER
Q467 DTA144ES
Q465 2SC1740SR
Q464 BUFFER
Q462 2SC1740SR
PB CHROMA AMP
Q416 2SC1740SR
IC411
LA7323
Y PROCESS
IC461
C-PROCESS
IC441
LA7331
IC461
IC412
LC8992
1H DELAY
LEVEL ADJ.
IC511
BA7025L
SECAM
DISCRIMINATE
PB AMP
BURST DEEM
KILLER
SIG DET
AFT
90° PS
FSIP GEN
VCO
X2
REC APC
HHK
PB APC
BGP GEN
3RD LOCK PROTECT
ID COUNT
ACC DET
ACC AMP
BURST EMPH
MAIN CONV
BALANCE
60DB AMP
R/P DET
KILLER COMP
320/321 VCC
PB Y/C MIX AMP
60B AMP
P1C CONT
MUTE
SYNC AMP
DELAY
SYNC SEP
LPF
COMB
LIM
NL DE EMPH
NC
AMP
BPF
CHROMA RECORDING CURRENT ADJ.
FIL463
5.06MHZ
FIL462
4.43MHZ
FIL511
4.5MHZ
WAVE FORMS NO.
MODEL HV-G55:GPSE, AGP
MODEL HV-G53:AGPSE
MODEL HV-G51:GPSE
MODEL HV-G50:GPSH, BIP



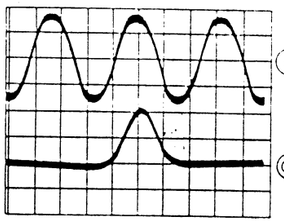
WAVE FORM — 1

SERVO WAVE FORM

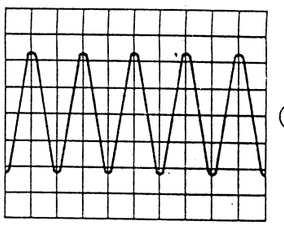
1. DRUM PG AND FG
Upper : DRUM PG AC 0.1V/div.
(IC203 pin (16))
Lower : DRUM FG AC 50mV/div.
(IC203 pin (17))
Time 5ms/div.



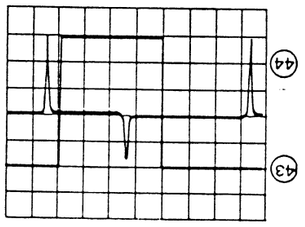
2. DRUM PG AND FG
Enlargement of 1
The PG pulse (upper) is generated (either positive or negative) when the FG pulse (lower) is a negative half wave.



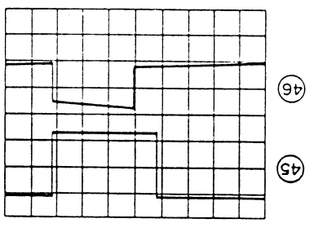
3. CAPSTAN FG (IC203 pin (18))
AC 0.1V/div.
Time 1ms/div.

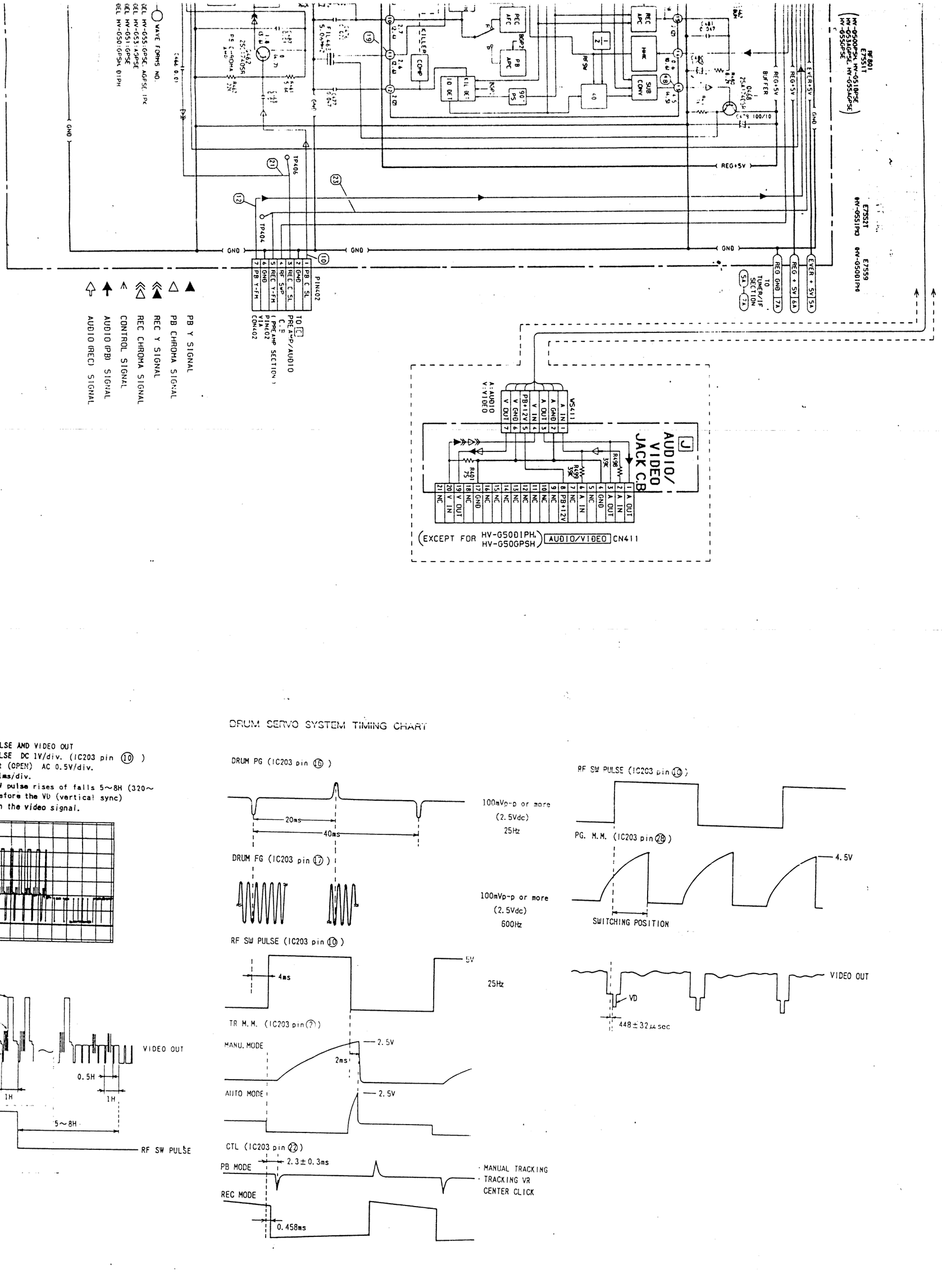


4. RF SW PULSE AND CTL (PB MODE)
RF SW PULSE DC 1V/div. (IC203 pin (10))
CTL AC 0.5V/div. (IC203 pin (22))
Time 5ms/div.
The CTL pulse (negative) is 2.3±0.3ms from the leading edge of the RF SW pulse.

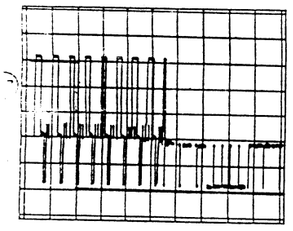


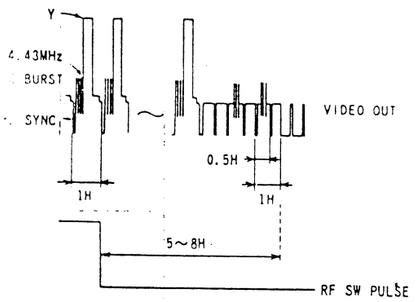
5. RF SW PULSE AND CTL (REC MODE)
Upper : RF SW PULSE DC 2V/div.
(IC203 pin (10))
Lower : CTL AC 2V/div.
(IC203 pin (22))
Time 5ms/div.





6. RF SW PULSE AND VIDEO OUT
RF SW PULSE DC 1V/div. (IC203 pin ⑩)
Video out (OPEN) AC 0.5V/div.
Time 0.1ms/div.
The RF SW pulse rises of falls 5~8H (320~512μs) before the VD (vertical sync) signal in the video signal.





DRUM SERVO SYSTEM TIMING CHART

DRUM PG (IC203 pin ⑯)

100mVp-p or more
(2.5Vdc)
25Hz

DRUM FG (IC203 pin ⑰)

100mVp-p or more
(2.5Vdc)
600Hz

RF SW PULSE (IC203 pin ⑩)

25Hz

TR M.M. (IC203 pin ⑦)

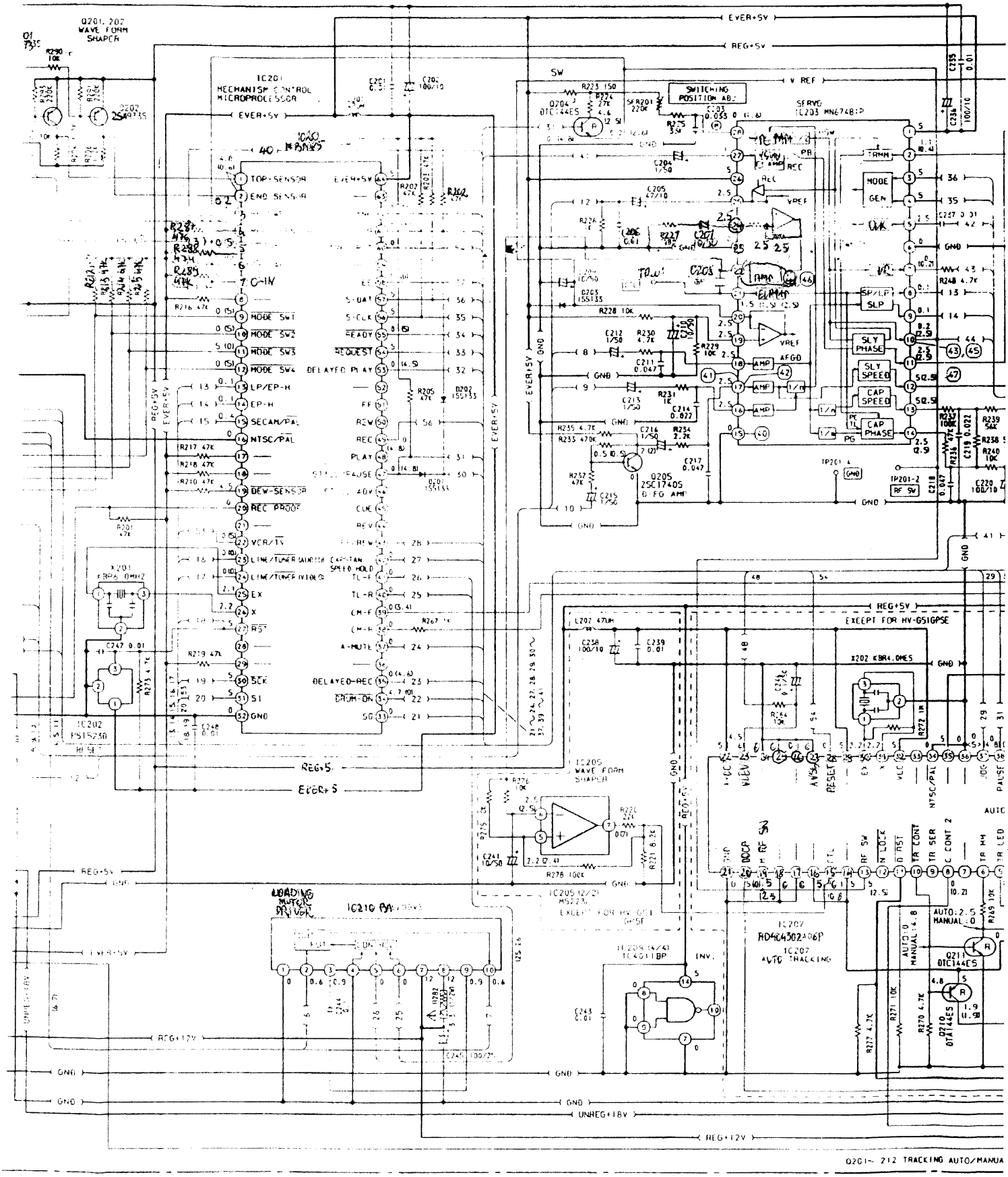
CTL (IC203 pin ㉒)

· MANUAL TRACKING
· TRACKING VR
CENTER CLICK

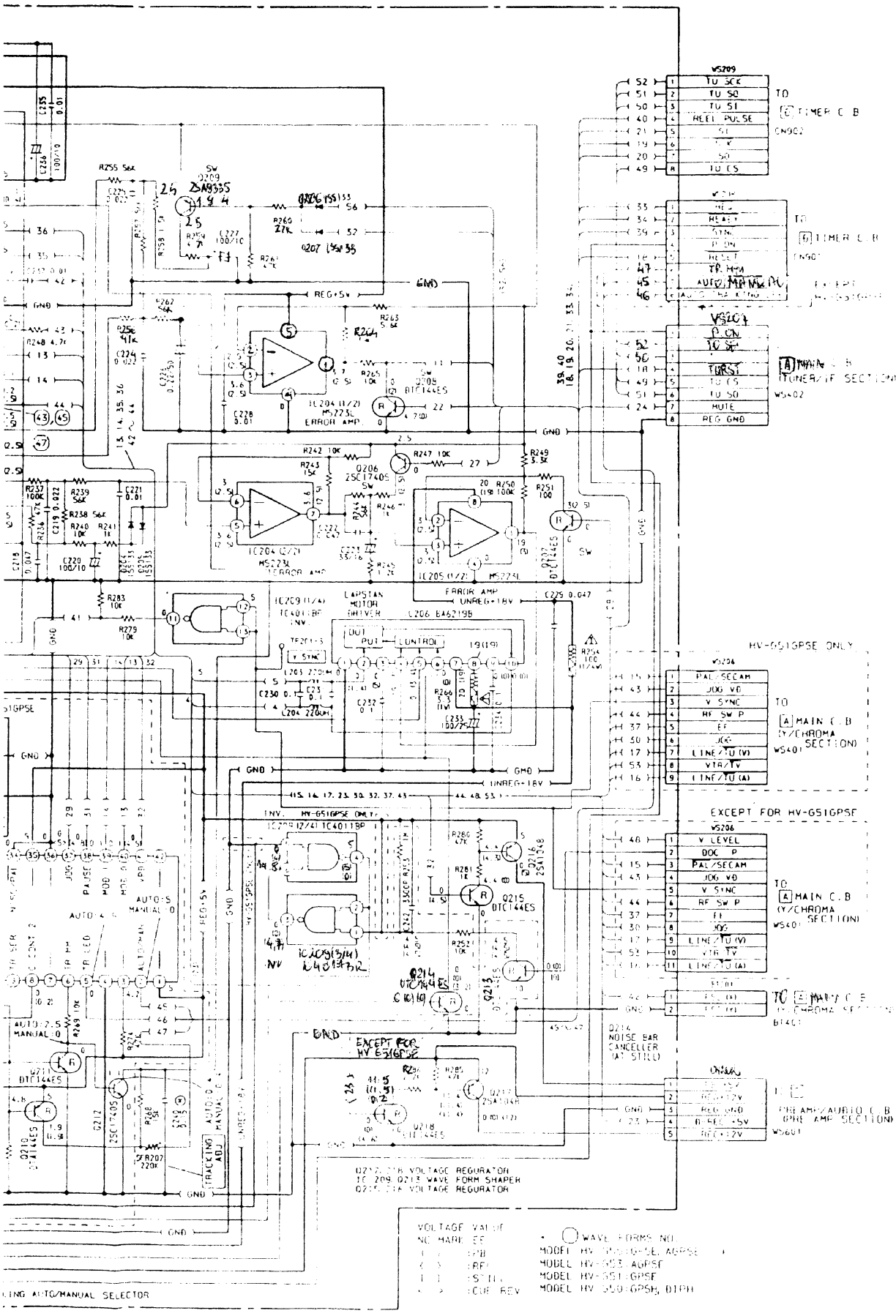
RF SW PULSE (IC203 pin ⑩)

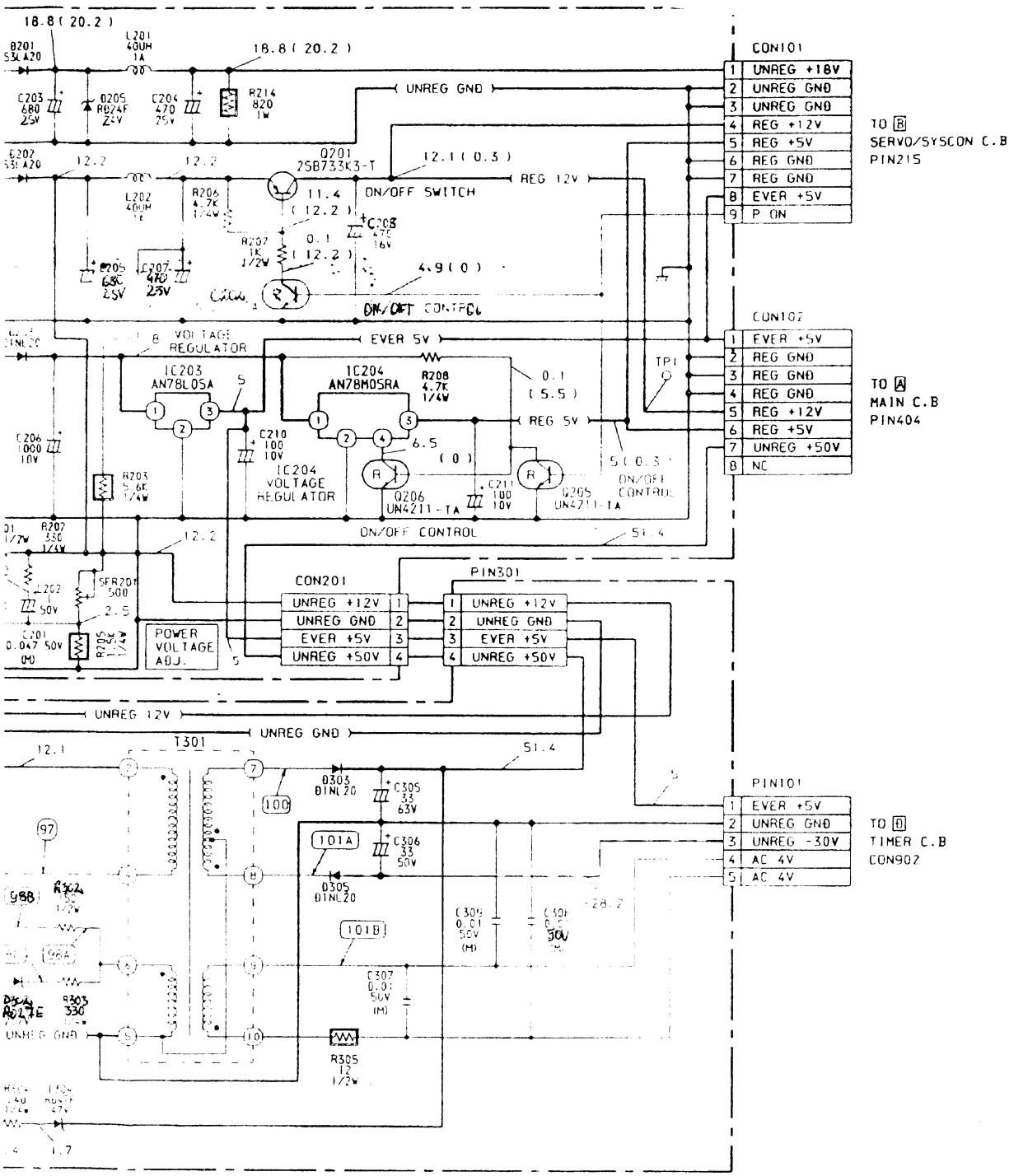
PG. M.M. (IC203 pin ㉘)

SERVO/SYSCON C.B



Q201~ 212 TRACKING AUTO/MANUA


WS209
TU SCK
TU SO
TU S1
REEL PULSE
TO
TIMER C.B
CN902
WS207
P.ON
TO SCK
TURST
TU CS
TU SO
MUTE
REG GND
MAIN C.B
TUNER/IF SECTION
WS402
REG+5V
GND
UNREG+18V
HV-G51GPSE ONLY
WS206
PAL/SECAM
JOG VD
V SYNC
RF SW P
FF
JOG
LINE/TU (V)
VTR/TV
LINE/TU (A)
MAIN C.B
(Y/CHROMA SECTION)
WS401
EXCEPT FOR HV-G51GPSE
V LEVEL
DOC P
NOISE BAR CANCELLER (AT STILL)
FIRE AMP/AUDIO C.B
WS601
IC204 (1/2) M5223L ERROR AMP.
IC205 (1/2) M5223L ERROR AMP
IC206 BA6219B
CAPSTAN MOTOR DRIVER
IC209 (1/4) TC4011BF INV.
IC208 (2/4) TC4011BP INV.
IC209 (3/4) TC4011BP
Q214 DTC144ES
Q215 DTC144ES
Q216 2SA1048
Q217 2SA1048
Q218 DTC144ES
Q211 DTC144ES
Q212 2SC1740S
Q213 DTC144ES
Q214 NOISE BAR CANCELLER (AT STILL)
Q211,212 VOLTAGE REGURATOR
IC 209 Q213 WAVE FORM SHAPER
Q215,216 VOLTAGE REGURATOR
AUTO/MANUAL SELECTOR
TRACKING ADJ
VOLTAGE VALUE
WAVE FORMS NO.
MODEL HV-G51GPSE, AGPSE
MODEL HV-G53AGPSE
MODEL HV-G51GPSE
MODEL HV-G50GPSE, DTPH


CON101
1 UNREG +18V
2 UNREG GND
3 UNREG GND
4 REG +12V
5 REG +5V
6 REG GND
7 REG GND
8 EVER +5V
9 P ON
TO B
SERVO/SYSCON C.B
PIN215
CON102
1 EVER +5V
2 REG GND
3 REG GND
4 REG GND
5 REG +12V
6 REG +5V
7 UNREG +50V
8 NC
TO A
MAIN C.B
PIN404
PIN101
1 EVER +5V
2 UNREG GND
3 UNREG -30V
4 AC 4V
5 AC 4V
TO D
TIMER C.B
CON902
CON201
UNREG +12V 1
UNREG GND 2
EVER +5V 3
UNREG +50V 4
PIN301
1 UNREG +12V
2 UNREG GND
3 EVER +5V
4 UNREG +50V
IC203 AN78L05A
IC204 AN78M05RA
IC204 VOLTAGE REGULATOR
Q201 2SB733K3-T
Q206 UN4211-TA
Q205 UN4211-TA
ON/OFF SWITCH
ON/OFF CONTROL
VOLTAGE REGULATOR
POWER VOLTAGE ADJ.
T301
REG 12V
REG 5V
EVER 5V
UNREG 12V
UNREG GND
18.8 (20.2)
12.2
12.1 (0.3)
11.4 (12.2)
4.9 (0)
6.5 (0)
0.1 (5.5)
TP1
S1.4

D TIMER C.B

L902 100UH
C904 22/16
C905 0.047
REMOTE SENSOR
IC902(RU901) SBX1610-52

CN902
TU SCK 1
TU SO 2
TU SI 3
REEL PULSE 4
SI 5
SCK 6
SO 7
TU CS 8
TO B SERVO/SYSCON Q.B WS209

CN901
REQ 1
READY 2
SYNC 3
P.ON 4
RESET 5
TR.MM 6
AUTO/MANUAL 7
AUTO TRACKING LED 8
TO B SERVO/SYSCON C.B WS208
EXCEPT FOR HV-G51GPSE

R910 47K
R909 47K
R908 47K
R907 47K
R917 10K
R912 10K
R916 10K
R911 1K
D940
EVER+5V
GND

Q901~908 DTC144ES BUFFER
Q901 Q902 Q903 Q904 Q905 Q906 Q907 Q908
D901~908, 910~920, 922~934, 937, 939~941 1SS133×36

SW902 D910 EJECT
SW903 D911 STOP
SW904 D912 PLAY
SW905 D913 REW
SW906 D914 F.FWD
SW907 D915 NOISE CANCEL
SW908 D916 REC
SW909 D917 QTR
SW910 D918 TIMER REC
SW911 D919 COUNTER RESET
SW912 D920 COUNTER MEMORY
SW914 D922 CLOCK/COUNTER
SW915 D923 PRGM/CHECK
SW916 D924 NEXT
SW917 D925 CLEAR
SW918 D926 TIME SET
SW919 D927 CH UP
SW920 D928 CH DOWN
SW921 D929 PRESET
SW922 D930 10
SW923 D931 1
SW924 D932 TUNNING +
SW925 D933 TUNNING -
SW926 D934 INPUT SELECT
SW931 D941 TEST
SW929 D937 BAND

TIMER MICROPROCESSOR IC901 UPD75208CW-A25
TP901
L901 100UH
X901 4.19M
X902 32.768K
C901 22/16
C902 22/16
C903 0.047
C907 15/25
C909 10P(CH) C901 20P C906 18P(CH)
R903 1M
R920 1K
R901 330K
R906 68K
D942 HZ9CTL
SWITCH Q910 DTC144ES
TC901 CLOCK FREQ. ADJ.

CON902
EVER +5V 1
UNREG GND 2
EVER -30V 3
AC 4V 4
AC 4V 5
TO V POWER C.B-3 PIN101

113 (AC)
114 (DC)

SERVICE TV/VCR EP LP KM3 KM2 KM1 KM0 P.ON SYNC READY REQ BUZ TUCS SO SCK SI 24H/12H REEL.P REMOTE CONT TUSI TUSO TUSCK TEST
EX PPO XT POWER LED RST
G10 G9 G8 G7 G6 G5 G4 G3 G2 G1
J I H G F E D C B A

SW930. D939 AUTO TRACKING
SWITCH Q909 DTC144ES
R904 10K
RV901 250K
EXCEPT FOR HV-G51GPSH TRACKING

FL DISPLAY (FL901)
g f b a h
◀◀ ■ ▶▶ (10G)
a b f g c e d h i
1 2 3 4 5 6 7 W EDIT (4G)
FL901 DISPLAY

J901 J901-1 J901-2
J901-1 AUDIO IN
J901-2 VIDEO IN
D947 1SS133
D948 1SS133
R905 33K
RV902 10K
PICTURE

CON901
F/R A 1
F LINE A (X) 2
F LINE A (Y) 3
F/R V 4
F LINE V (X) 5
F LINE V (Y) 6
REG GND 7
Y REG+5V 8
PICTURE CONT 9

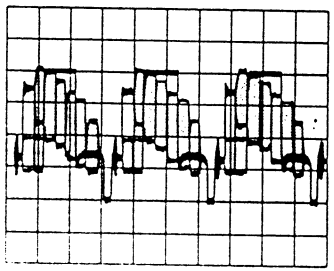
CN903
EVER +5V 6
UNREG GND 5
POWER LED 4
BUZZER 3
KM0 2
S0 1

X903 PKM22EP
D938 SLZ-9B1C-02
R919 220
POWER
2 (POWER OFF:5)
CN904
EVER +5V 6
UNREG GND 5
POWER LED 4
BUZZER 3
KM0 2
S0 1
E POWER SW C.B
TO A MAIN C.B PIN401

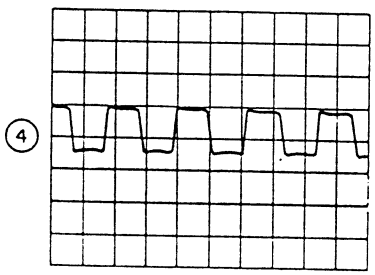
WAVE FORMS NO.
MODEL HV-G55:GPSE, AGPSE, IPK
MODEL HV-G53:AGPSE
MODEL HV-G51:GPSE
MODEL HV-G50:GPSH, 0IPH

VIDEO WAVE FORM

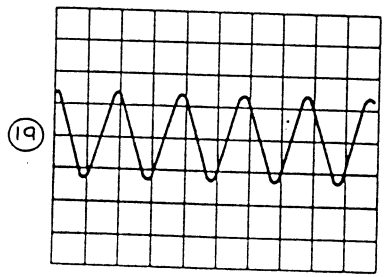
IC411 pin (21) (PB)
20μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE



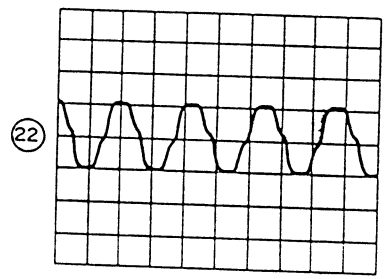
IC461 pin (18) (PB)
100ns/div.
500mV/div.



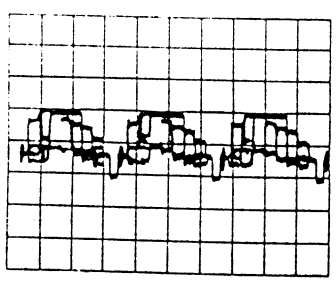
IC461 pin (11)
100ns/div.
100mV/div.



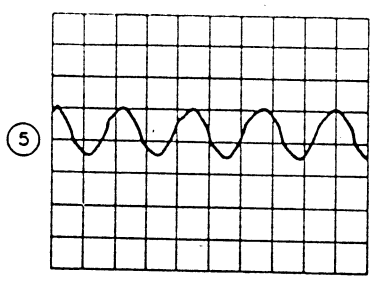
IC461 pin (18) (EE)
50mV/div.
100ns/div.



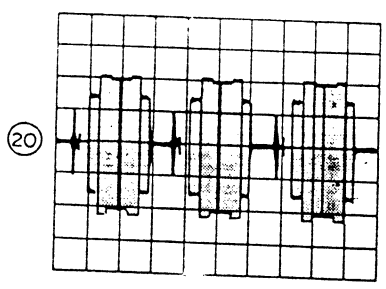
LINE OUT
20μs/div.
500mV/div.
LINE OUT 75Ω TERMINATE



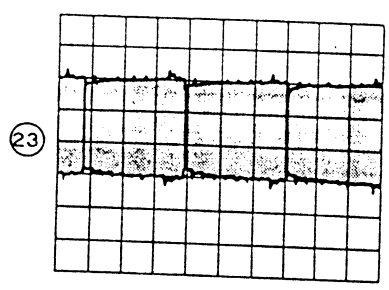
IC461 pin (19) (PB)
100ns/div.
500mV/div.



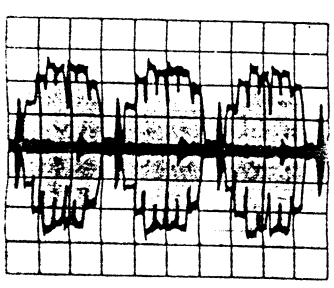
IC461 pin (9) (EE)
200mV/div.
20μs/div.



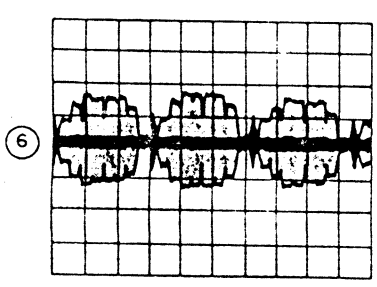
PIN402 pin (5) (EE)
100mV/div.
20μs/div.



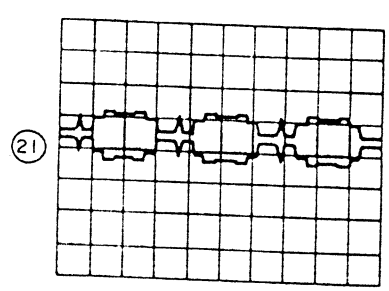
C411 pin (9) (PB)
20μs/div.
100mV/div.



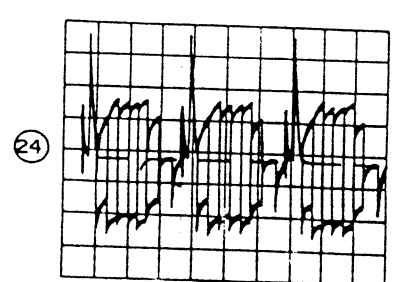
IC461 pin (5) (PB)
20μs/div.
500mV/div.



PIN402pin (3) (EE)
50mV/div.
20μs/div.



IC461 pin (5) (EE)
100mV/div.
20μs/div.



Pin No.	Pin Name	I/O	Description	Active
21	——	–	Unused.	–
22	VCR/TV	O	Switches the ... of the VCR. "H" : Built-in RF converter signal output "L" : External antenna signal output	H or L
23	LINE/TUNER (AUDIO)	O	Switches the audio output. "H" : Line input audio "L" : Tuner audio	H or L
24	LINE/TUNER (VIDEO)	O	Switches the video output. "H" : Line input video "L" : Tuner video	H or L
25 26	EX X	I O	A ceramic oscillator which generates the system clock signal (6MHz) is connected to these pins.	
27	RST	I	System reset input.	L
28	——	–	Unused.	–
29	——	–	Unused (pulled up).	–
30	SCK	I	Receives a pulse to time writing/reading of the serial data to/from the timer microprocessor.	Pulse
31	SI	I	Signal for receiving serial data from the timer microprocessor.	H or L
32	GND	–	GND.	–
33	SO	O	Signal to output serial data to the timer microprocessor.	H or L
34	DRUM-ON	O	Drum motor rotation/stop control.	L
35	DELAYED-REC	O	Outputs "H" after the tape transport and the capstan speed are stabilized when the stop mode is switched to the record mode and the record pause mode is switched to the record mode, to instruct recording of a signal on the tape.	H
36	——	–	Unused.	–
37	A-MUTE	O	Mutes an audio signal. A) Outputs "H" during trick play. B) Outputs "H" for the specified period before and after the EE output is inverted to cut off the noise occurring when switching between the tape recording signal and EE signal (when the EE output is inverted).	H
38 39	CM-R CM-F	O O	Capstan motor rotation/stop and rotation direction control outputs.	H H

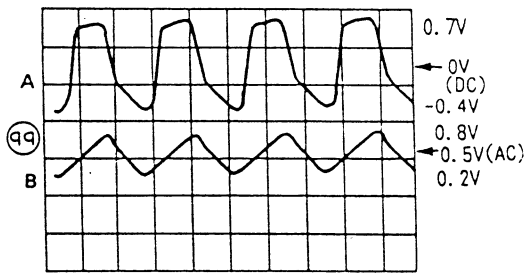
CM-F	CM-R	State
L	L	Motor stopped
H	L	Rotates forward
L	H	Rotates in reverse
H	H	Braking stopped

Pin No.	Pin Name	I/O	Description	Active
40 41	TLM-R TLM-F	O O	Tape sledding motor rotation/stop and rotation direction control outputs.	H H

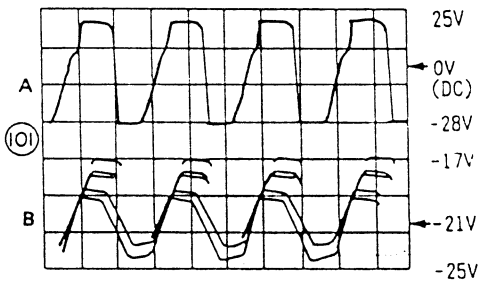
TLM-F	TLM-R	State
L	L	Motor stopped
H	L	Rotates forward
L	H	Rotates in reverse
H	H	Braking stopped

Pin No.	Pin Name	I/O	Description	Active
42	CAPSTAN-SPEED·HOLD	O	Outputs "H" when the tape sledding motor moves among the REVERSE, PLAY and PINCH OFF positions accompanying the transition between PLAY and REVIEW from REC to REC PAUSE. Outputs "H" during STILL and PAUSE to hold the capstan speed so the capstan servo circuit can easily be returned to the play speed.	H
43	FF/REW	O	Outputs "H" during FF/REW, cassette-in and out operations and during unloading from PLAY to STOP. Controls the high-speed rotation of the capstan motor.	H
44	REV	O	Unused. Outputs "H" during REVIEW. Controls the review speed of the servo circuit.	H
45	CUE	O	Unused. Outputs "H" during CUE. Controls the cue speed of the servo circuit.	H
46	STILL-ADVANCE	O	Unused. Outputs "H" during STILL ADVANCE.	H
47	STILL /PAUSE	O	Unused. Outputs "H" during STILL, REC PAUSE and S-ADV.	H
48	PLAY	O	Unused. Outputs "H" during PLAY, STILL, CUE, REV and S-ADV.	H
49	REC	O	Unused. Outputs "H" during REC and REC PAUSE.	H
50	REW	O	Unused. Outputs "H" during REW and REV.	H
51	FF	O	Unused. Outputs "H" during FF and CUE.	H
52	——	–	Unused.	–
53	DELAYED-PLAY	O	Outputs "H" after the tape transport and capstan speed are stabilized when STOP is switched to PLAY and STOP is switched to STILL, to prevent picture distortion.	H
54	REQUEST	O	Signal to request serial communications to the timer microprocessor.	L
55	READY	O	Signal to inform the timer microprocessor that the standby for serial data reception is completed.	L
56	S·CLK	O	Outputs a pulse to time the writing of serial data to the servo IC.	Pulse
57	S·DAT	O	Signal to output serial data to the servo IC.	H or L
58	EE	O	Switches the video output between the external input signal and tape playback signal. "H" : External input signal "L" : Tape playback signal	H
59	——	–	Unused.	–
60	TRKG RST	O	Outputs a pulse of approx. 5ms when the POWER, EJECT or REC key is pressed to reset the tracking microprocessor.	H
61	JOG	O	Outputs "H" during CUE and REV.	H
62	SYNC	I	Signal to synchronize serial communications with the timer microprocessor.	L
63	——	–	Unused.	–
64	EVER +5V	–	Positive power supply pin.	–

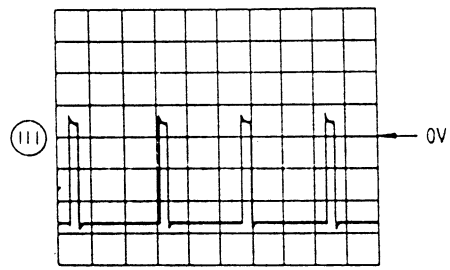
• Q301 BASE SIDE (99 -A)
0.5V/div.
2μs/div.
• Q302 BASE SIDE (99 -B)
0.5V/div.
2μs/div.



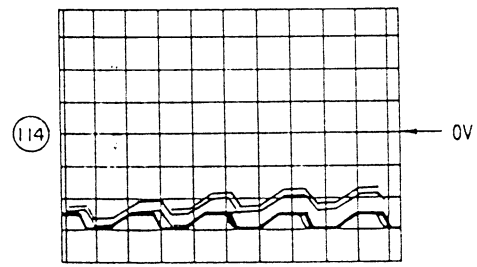
• T301 pin 8 (101 -A)
20V/div.
2μs/div.
• T301 pin 9 (101 -B)
2V/div.
2μs/div.



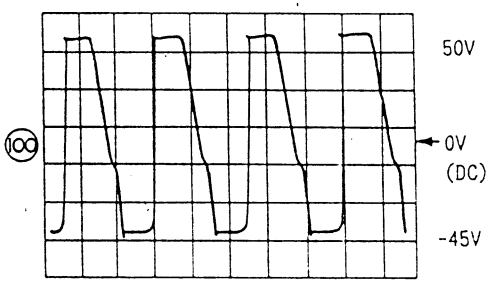
Anode voltage
IC901 pin 58 : S9
2ms/div.
10V/div.



Filament voltage
CON902 pin 5 : AC 4V
DC range
2μs/div.
10V/div.

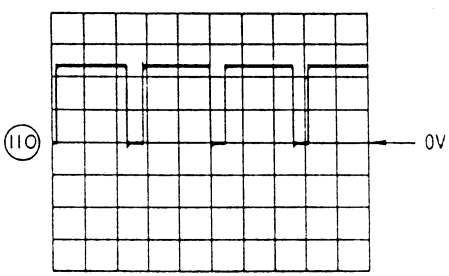


• D303 ANODE SIDE
20V/div.
2μs/div.

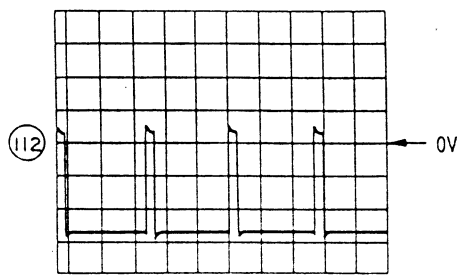


TIMER WAVE FORM

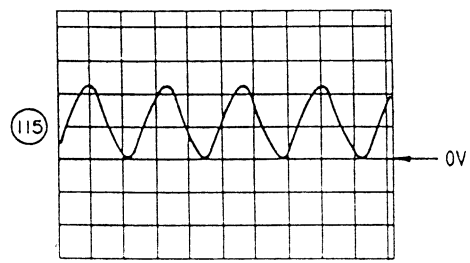
Q901 DTC144E Base
2ms/div.
2V/div.



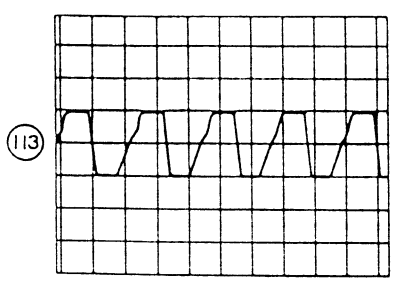
Grid voltage
IC901 pin 40 : T0
2ms/div.
10V/div.



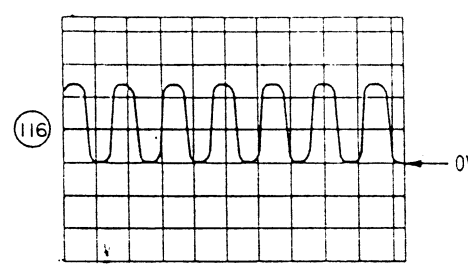
Main clock
IC901 pin 31 : X
4.19MHz
100ns/div.
2V/div.



Filament voltage
CON902 pin 5 : AC 4V
AC range
2μs/div.
5V/div.

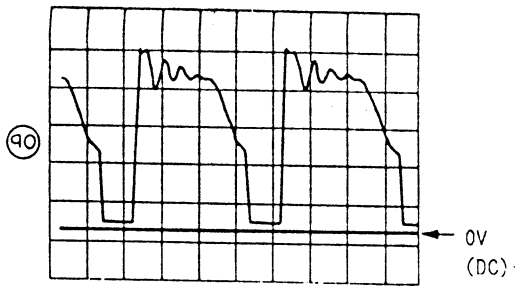


Sub-clock
IC901 pin 34 : XT
32.768kHz
20μs/div.
2V/div.

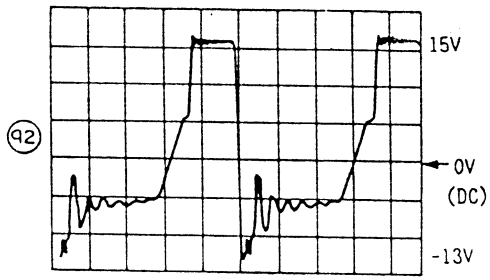


POWER UNIT WAVE FORM

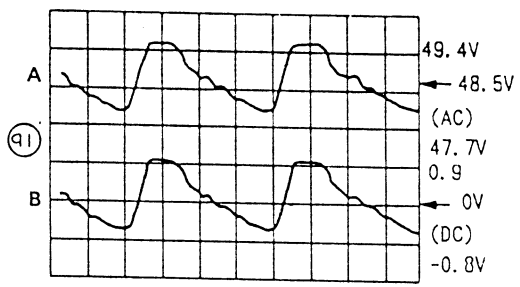
• HIC101 pin ② WAVE FORM
(T101 pin ④)
500Vp-p
200μs/div.



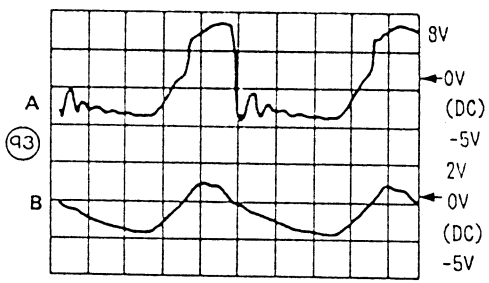
• T101 pin ⑤
5V/div.
2μs/div.



• C107 ⊕ SIDE (⑨1 -A)
1V/div.
2μs/div.
• C107 ⊖ SIDE (HIC101 pin ③)(⑨1 -B)
1V/div.
2μs/div.

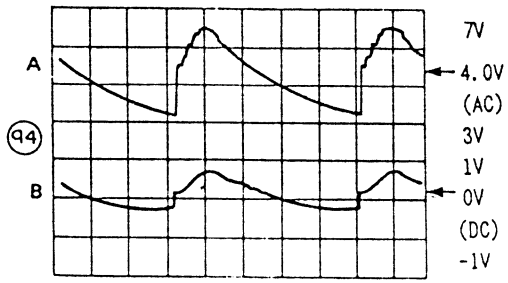


• D102 ANODE SIDE (⑨3 -A)
5V/div.
2μs/div.
• HIC101 pin ⑤ (⑨3 -B)
5V/div.
2μs/div.

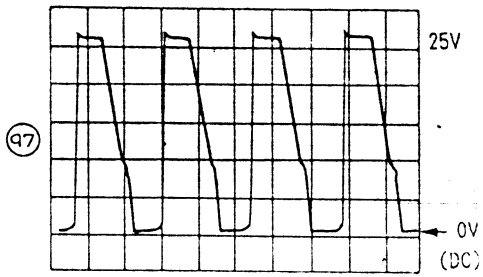


※ • When checking waveforms (90) - (95), connect the negative (-) terminal of C104 to ground (GND on primary side).
• When checking waveforms (96) and (101), connect pin 2 of CON101 to ground (GND on secondary side).
• Waveforms should be measured in the PB mode and with AC 220V power input.

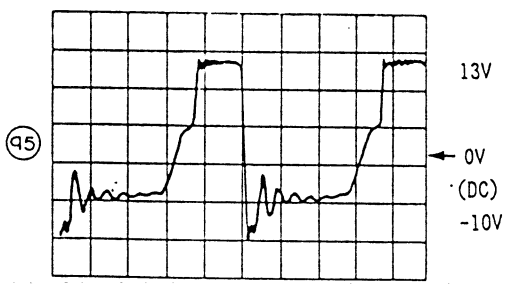
• D102 CATHOD SIDE (⑨4 -A)
2V/div.
2μs/div.
• HIC101 pin ⑥ (⑨4 -B)
2V/div.
2μs/div.



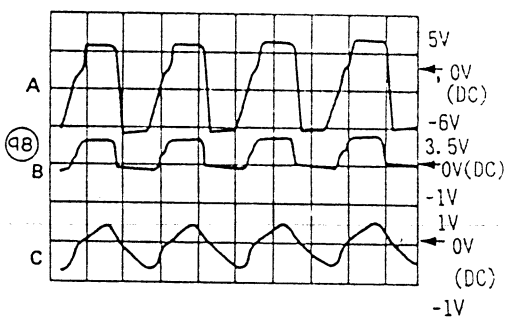
• Q301 COLLECTOR SIDE
5V/div.
2μs/div.



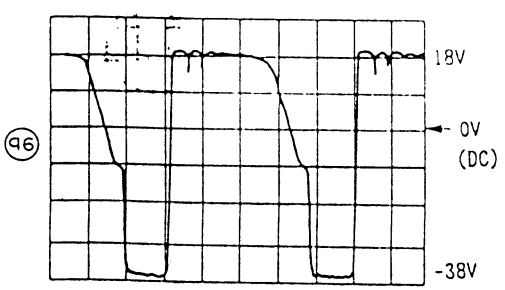
• HIC101 pin ⑦
5V/div.
2μs/div.



• T301 pin ⑥ (⑨8 -A)
5V/div.
2μs/div.
• D302 CATHOD SIDE (⑨8 -B)
5V/div.
2μs/div.
• D301 ANODE SIDE (⑨8 -C)
2V/div.
2μs/div.

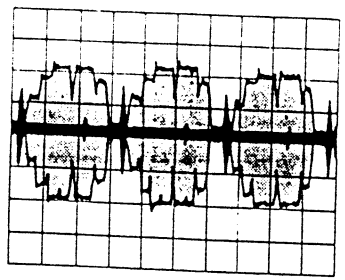


• T101 pin ⑪
10V/div.
2μs/div.



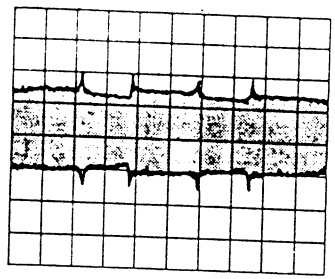
IC461 pin ③ (PB)
20µs/div.
50mV/div.

⑦



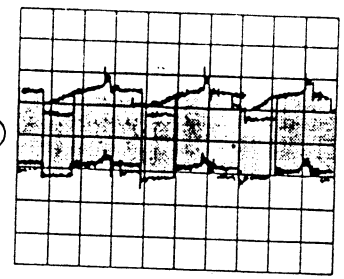
PIN402 pin ① (PB)
5ms/div.
100mV/div.

⑩



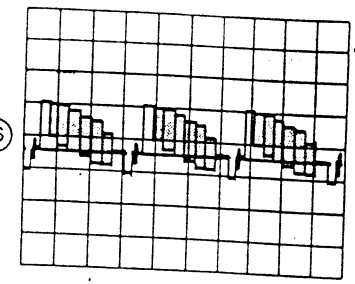
IC411 pin ⑦ (PB)
20µs/div.
500mV/div.

⑬



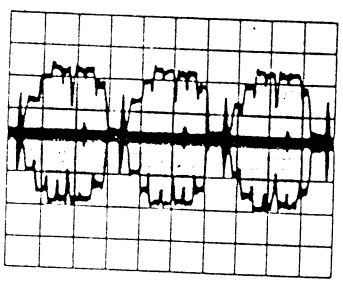
LINE OUT (EE)
20µs/div.
500mV/div.

⑯



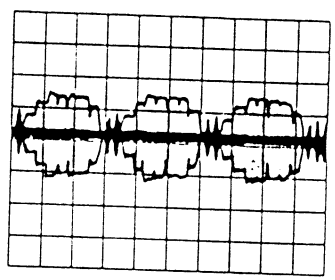
IC461 pin ㉔ (PB)
20µs/div.
50mV/div.

⑧



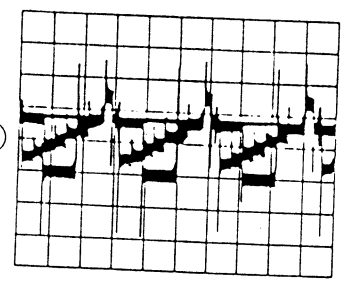
IC461 pin ⑦ (PB)
20µs/div.
100mV/div.

⑪



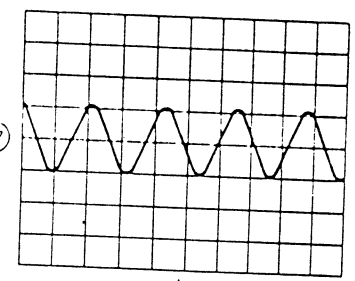
FL411 OUT (PB)
20µs/div.
100mV/div.

⑭



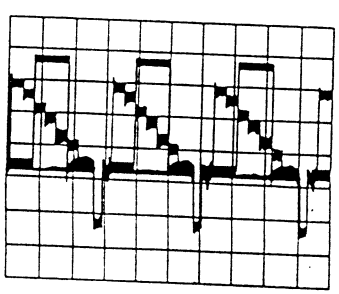
IC461 pin ⑲ (EE)
100ns/div.
500mV/div.

⑰



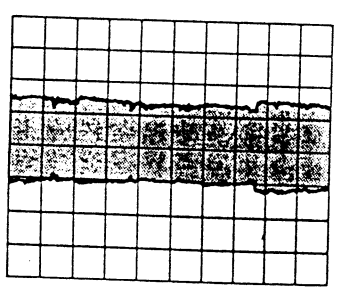
IC411 pin ⑨ (PB)
20µs/div.
100mV/div.

⑨



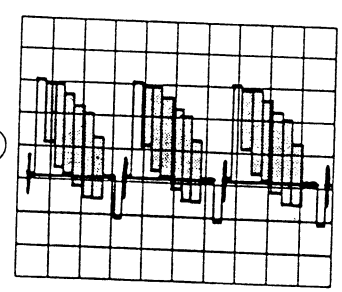
PIN402 pin ⑦ (PB)
5ms/div.
200mV/div.

⑫



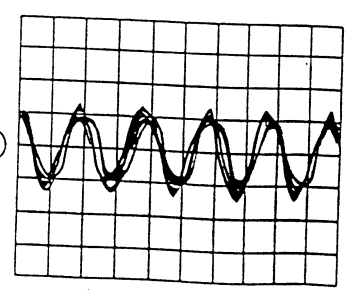
IC411 pin ㉑ (EE)
20ns/div.
500mV/div.

⑮

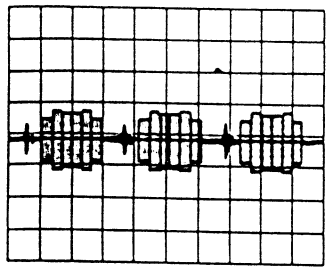


IC461 pin ⑬
100ns/div.
100mV/div.

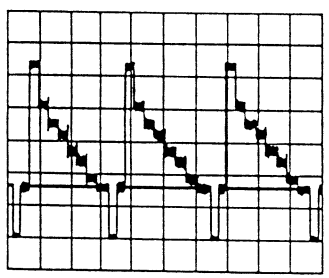
⑱



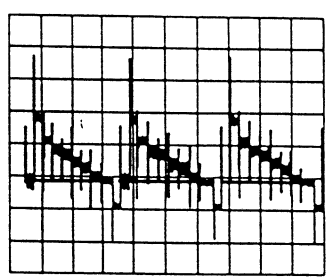
IC461 pin ③ (EE)
50mV/div.
20μs/div.



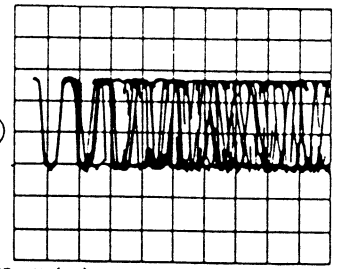
IC411 pin ⑥ (EE)
20μs/div.
100mV/div.



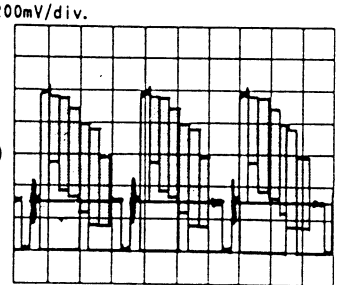
IC411 pin ② (EE)
20μs/div.
200mV/div.



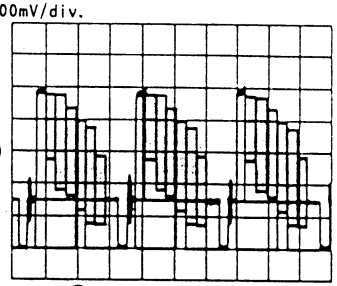
IC411 pin ㉚ (EE)
200ns/div.
500mV/div.



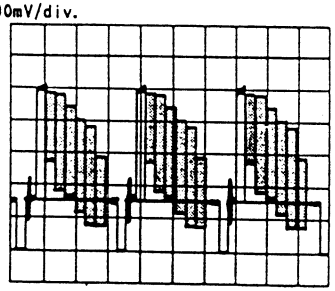
LINE IN (EE)
20μs/div.
200mV/div.



IC411 pin ㉔ (EE)
20μs/div.
200mV/div.



IC411 pin ⑦ (EE)
20μs/div.
200mV/div.



IC DESCRIPTION

IC, MB88525-205M (IC201)

Pin No.	Pin Name	I/O	Description	Active
1	TOP-SENSOR (START)	I	Receives the tape top (start) detection signal and A) Prevents the tape running in the reverse direction. B) Shifts the unit to the stop mode if this signal is input when the tape is running in reverse.	H
2	END-SENSOR	I	Receives the tape end detection signal and A) Prevents the tape running in the forward direction. B) Shifts the unit to the stop mode if this signal is input when the tape is running in forward.	H
3	RF-SWP	I	Receives drum rotation pulses. When pulses are not input for 2 seconds in a mode where the drum is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.	Pulse
4	REEL-SENSOR	I	Receives a signal from the reel sensor in the deck mechanism. When pulses are not input for 2 seconds in a mode where the reel is rotating due to an abnormality in the tape or deck mechanism, the VCR enters the stop mode to protect the tape.	Pulse
5	$\overline{\text{CASSETTE-OUT}}$	I	The CASSETTE OUT switch in the cassette loading mechanism is connected to detect the cassette-out state (eject). Instructs the cassette out operation (unloading) to stop.	L
6	$\overline{\text{CASSETTE-START}}$	I	The CASSETTE START switch in the cassette loading mechanism is connected to instruct the cassette-in operation (loading). When the input is detected during the cassette-out operation, the capstan motor is pulse driven.	L
7	$\overline{\text{CASSETTE-IN}}$	I	The cassette-in switch in the cassette loading mechanism is connected to detect the cassette-in state.	L
8	——	—	Unused (pulled up).	—
9	$\overline{\text{MODE SW 1}}$	I	These pins detect the position of the tape sledding mechanism.	L
10	$\overline{\text{MODE SW 2}}$	I		L
11	$\overline{\text{MODE SW 3}}$	I		L
12	$\overline{\text{MODE SW 4}}$	I		L
13	LP·EP-H	I	Tape speed detection inputs.	H
14	EP-H	I		H
15	MESECAM/$\overline{\text{PAL}}$	I	Video system discrimination inputs.	H or L
16	NTSC/$\overline{\text{PAL}}$	I		H or L
17	——	—	Unused (pulled up).	—
18	——	—	Unused (pulled up).	—
19	$\overline{\text{DEW-SENSOR}}$ (fixed at "H")	I	Receives a signal from the dew sensor circuit and prevents mechanical operation in the high humidity state.	L
20	$\overline{\text{REC-PROOF}}$	I	Detects the presence/absence of the mis-erasure prevention tab. "H" : No tab "L" : Tab	L

	NTSC/PAL	LP·EP-H	EP-H
SP	2H/3H	L	L
LP	4H/3H	H	L
EP	6H/6H	H	H

NTSC/$\overline{\text{PAL}}$	MESECAM/$\overline{\text{PAL}}$	MODE
H	✱	NTSC
L	H	MESECAM
L	L	PAL

✱ : DON'T CARE

μPD75208CW-A25 (IC901)

Pin No.	Pin Name	I/O	Description	Active
1	D	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
2	C	O		
3	B	O		
4	A	O		
5	$\overline{TEST}$	I	Input for the test mode of the unit.	L
6	$\overline{TUSCK}$	I	Receives a pulse to time the writing/reading of serial data to/from the tuner microprocessor.	Pulse
7	TUSO	O	Signal to output serial data to the tuner microprocessor.	H or L
8	TUSI	I	Signal for receiving serial data from the tuner microprocessor.	H or L
9	$\overline{REMOCON}$	I	Remote control data input.	Pulse
10	REEL-PULSE	I	Receives a signal from the reel sensor in the deck mechanism. Receives reel pulses for the tape counter. When 4 pulses are input, the counter counts up by one step.	Pulse
11	24h/$\overline{12h}$	I	Switches the clock indication. "H" : 24 hours "L" : 12 hours AM/PM	H or L
12	SI	I	Signal to receive serial data from the mechanism microprocessor.	H or L
13	$\overline{SCK}$	O	Receives a pulse to time the writing/reading of serial data to/from the mechanism microprocessor.	Pulse
14	SO	O	Signal to output serial data to the mechanism microprocessor.	H or L
15	TUCS	O	Outputs a signal to request serial communications to the tuner microprocessor.	H
16	BUZZER	O	Output signal (approx. 2kHz) to drive the buzzer.	Pulse
17	$\overline{REQUEST}$	I	Receives a signal to request serial communications from the mechanism microprocessor.	L
18	$\overline{READY}$	I	Receives a signal from the mechanism microprocessor which signals that the standby for serial data reception is completed.	L
19	$\overline{SYNC}$	O	Signal to synchronize serial communications with the mechanism microprocessor.	L
20	P. ON	O	Controls the power supply circuit of the VCR. Power is turned on.	H
21	KM 0	I	Key matrix scan input.	Pulse
22	KM 1	I	Key matrix scan input.	Pulse
23	KM 2	I	Key matrix scan input.	Pulse
24	KM 3	I	Key matrix scan input.	Pulse
25	LP-H	I	Tape speed mode. Tape speed is LP.	H
26	EP-H	I	Tape speed mode. Tape speed is EP.	H
27	TV/VCR	I	Selects the indication in the fluorescent display of the VCR. "H" : Displays information. "L" : Does not display information.	H
28	$\overline{SERVICE}$	I	Input for the service mode of the VCR.	L
29	PPO	–	Unused.	–
30	EX	I	A ceramic oscillator which generates a main system clock pulse (4.19MHz) is connected.	
31	X	O		

Pin No.	Pin Name	I/O	Description	Active
32	GND	–	GND.	–
33	EXT	I	A crystal oscillator which generates a sub-system clock pulse (32.768KHz) is connected.	
34	XT	O		
35	POWER LED	O	Outputs "H" when power is turned on.	H
36	——	–	Unused.	–
37	——	–		–
38	——	–		–
39	$\overline{RST}$	I	System reset input.	L
40	G10	O	Grid signals of the fluorescent display tube.	Pulse
41	G9	O		Pulse
42	G8	O		Pulse
43	G7	O		Pulse
44	G6	O		Pulse
45	G5	O		Pulse
46	G4	O		Pulse
47	G3	O		Pulse
48	G2	O		Pulse
49	G1	O		Pulse
50	——	–	Unused.	–
51	——	–		–
52	——	–		–
53	——	–		–
54	——	–		–
55	——	–		–
56	EVER -30V	I	The pull-down resistors of the FIP controller/driver are connected.	
57	EVER -3V	I	Supplies power to the output buffer of the FIP controller/driver.	
58	J	O	Anode signals of the fluorescent display tube.	Pulse
59	I	O		Pulse
60	H	O	Anode and key matrix signals for the fluorescent display tube.	Pulse
61	G	O		
62	F	O		
63	E	O		
64	EVER +5V	–	Positive power supply.	–

IC, μPD1730CT (IC68)

Pin No.	Pin Name	I/O	Description
1	OSC 1	I	4.5MHz ceramic oscillator input.
2	OSC 2	O	4.5MHz ceramic oscillator output.
3	PPO	O	D/A converter PWM output (tuning voltage).
4	CSYNC	I	H. sync pulse input (sync detection input).
5	AFT	I	AFT voltage input.
6	VDD	—	+5V power supply.
7	——	—	Unused.
8	AUS	I	Signal to select the destination, Australia.
9	CS	O	E²PROM chip select.
10	EUSI	I	E²PROM serial data input.
11	EUSO	O	E²PROM serial data output.
12	TUSO	O	Serial data output (input to the tuner).
13	TUCS	I	Data transfer trigger.
14	GND	O	GND.
15	POWER ON	I	POWER key signal.
16	——	—	Unused.
17	$\overline{\text{AFTC}}$	O	AFT control.
18	AFTC	O	AFT control.
19	TUMU	O	Goes "H" when muting a singnal.
20	TUMTC	O	Goes "L" when H. sync pulse is detected.
21	——	—	Unused.
22	——	—	Unused.
23	GND	—	GND.
24	$\overline{\text{RESET}}$	I	Goes "H" at the program start.
25	TUSI	I	Serial data input (output from the tuner).
26	$\overline{\text{TUSCK}}$	O	Serial data clock.
27	$\overline{\text{ROMCLK}}$	O	E²PROM clock.
28	BAND 1	O	} These pins assign the tuner band.
29	BAND 2	O	
30	——	—	Unused.

BAND	BAND1	BAND2
VH	1	0
VL	0	1
U	1	1

1: AUTO TRACKING

When the VCR is in a play mode other than the JOG (CUE/REV) and STILL modes, this function operates by turning AUTO TRACKING on (IC207 pin(2): High).

(Function devices)

IC207, Q450, Q451, Q210, Q211, Q212 and peripheral capacitors and resistors.

(Principle)

The tracks are traced so that the CTL signal (which is delayed = TR MM) is servo-locked during play. However, the CTL heads have tolerances within the specification in different mechanisms, therefore, TR MM (tracking control) is adjusted with ordinary VCRs and the CTL signal is set to the optimum position.

The auto tracking function detects the level of the signals output from the video heads and sets the delay from the CTL signal so that the level is maximum. Auto tracking is performed through the following three processes.

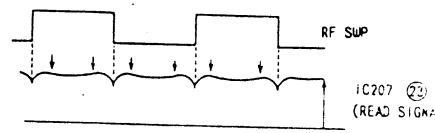
1. Search ... Detects the position where the level is maximum.
2. FIX ..... Fixes the delay so that the level is optimum.
3. Monitoring the change ... Detects whether or not the recording state was changed; if a change is detected, searching is started.

(Operation)

1. Search
   a. When a cassette is loaded and the VCR first enters the play mode.
   b. When the recording state was changed and the head output level changes (change of ±1/8 or more from the design value).
   c. When there are non-signal recorded sections and recorded sections due to a change of recording state.

   When the auto tracking circuit detects one of the following items, a, b and c, it performs searching and controls the delay from the CTL signal in steps so that the head output level is maximum.

Since the read levels vary as shown in the diagram below due to different rotation angles of the drum heads, the read timing is specified from RF SWP and the average read data is detected to improve reliability.



(↓·····Sampling the read data)

2. Fixing

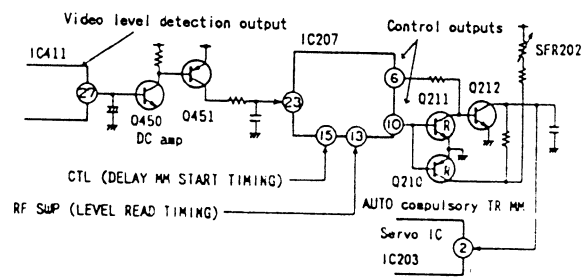
The delay is varied by the auto compulsory tracking ... (Q210, Q211, Q212) and the signal levels at each delay time are read. When the maximum level is detected, it is stored in memory and the delay is fixed.

The data of the tape with which search is completed is stored until ejection of power off is performed and the VCR enters the AUTO mode at the start of play without passing through search even when the stop mode is entered.

3. Monitoring of changes

The auto tracking circuit always monitors an abnormality even if the delay is fixed in the AUTO mode, and if any change occurs, it repeats search to adjust the tracking for the best.

(Note) The LED does not light in the following case even if the auto tracking switch is turned on.
When a tape with no signal recorded on it is played.
(presence/absence of CTL signal)



2. AUTO NOISE CANCELLER

When the STILL button is pressed during play, the auto noise canceller drives noise bars out of the screen so that they are not visible.

(Function devices)

IC207, IC209, Q213, Q214

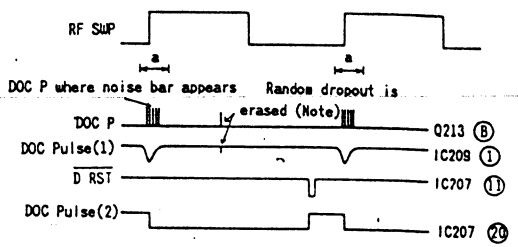
(Conditions)

IC207 determines whether the auto cancelling function should be operated or not and executes operation.

1. IC207 (41) High (PB)
2. IC207 (38) High (PAUSE)

(Principle)

The position of the noise bar can be known from the DOC P waveform in the video circuit. If the DOC P waveform is in area (a) of the RF SWP pulse as shown in the diagram below, the noise bar is not visible on the TV screen. The following DOC P pulse is produced so that IC207 (microprocessor) can read it easily.



1. When the trailing edge of the DOC P Pulse is within range (a) in the STILL mode, the cancelling operation is not necessary.
2. When it is out of range (a), the pulse which turn the capstan motor minutely are generated at pin 8 of IC207.
3. When the tape is fed minutely and the trailing edge of the DOC P pulse enters area (a), the generating of pulses is stopped.

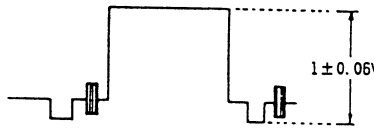
The DOC pulse moves to the right with reference to the RF SWP pulse in steps 2 and 3.

(Note) When tapes with large random dropouts are used, the random dropouts and DOC pulses cannot be discriminated and the unit performs the detection erroneously.

ELECTRICAL ADJUSTMENT

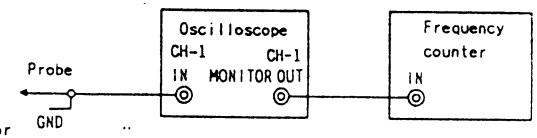
Preparation for adjustment

Input signal (100% white)

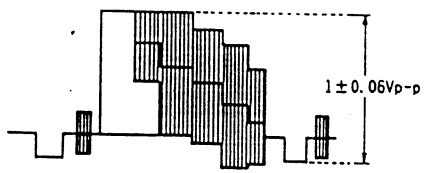


※Note : Voltage measured with a signal generator connected to the VCR

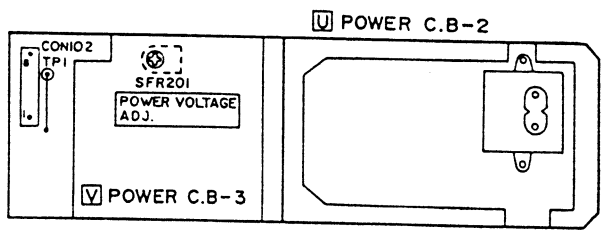
Connections of test equipment



Input signal (color bar)

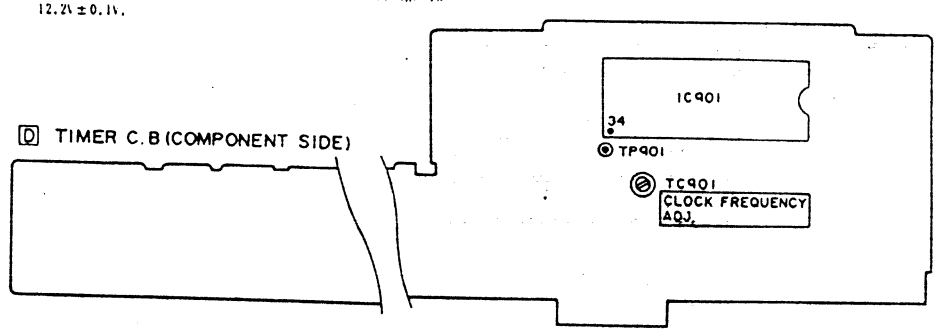


※Note : Voltage measured with a signal generator connected to the VCR



1.Power voltage adjustment (U POWER C.B-2)

1) Connect a digital tester between pin 5 (TP1) of CON102 on the main circuit board and ground.
2) Adjust SFR201 on the POWER C.B-2 so that the voltage is 12.2V ± 0.1V.



2.Clock frequency adjustment

(for the clock) (D TIMER C.B)

Frequency counter : Connected to oscilloscope monitor terminal of frequency counter.
IC901 pin (34) (TP901)

1) Turn the power on.
2) Adjust TC901 so that the frequency is within the sepcification, 32.768kHz ± 0.0025Hz.

HD66302A06F (IC207)

Pin No.	Pin Name	I/O	Description
1	——	–	Unused (fixed at "H").
2	AUTO/$\overline{\text{MAN}}$	I	Auto tracking on/off signal ("H" in the AUTO Mode).
3	——	–	Unused (fixed at "H").
4	——	–	Unused (fixed at "L").
5	TR LED	O	Outputs pulses to make the LED flash during search in the auto tracking mode, and outputs "H" after auto tracking is completed.
6	TR MM	O	Outputs a delay timing pulse during auto tracking.
7	——	–	Unused.
8	C CONT 2	O	Outputs a noise feed pulse in the noise cancelling mode.
9	——	–	Unused.
10	$\overline{\text{TR CONT}}$	O	Outputs "L" during auto tracking to switch the TR MM circuit to the AUTO side.
11	$\overline{\text{D RST}}$	O	Outputs a reset pulse to detect the noise position in the noise cancelling mode.
12	——	–	Unused.
13	RF SW	I	RF SWP input.
14	——	–	Unused (fixed at "H").
15	CTL	I	CTL shaped wave form input.
16	——	–	Unused (fixed at "H").
17	——	–	Unused (fixed at "L").
18	——	–	Unused (fixed at "L").
19	M RF SW	I	RF SWP input.
20	DOC P	I	Noise position detection signal for the noise canceller.
21	GND	–	Power supply (GND).
22	A VCC	–	Power supply (+5V) of A/D converter.
23	V LEV	I	Input to detect the amplitude of the video signal during auto tracking (Analog IN).
24	——	–	Unused (fixed at "L").
25	——	–	Unused (fixed at "L").
26	——	–	Unused (fixed at "L").
27	A VSS	–	Power supply (GND) of A/D converter.
28	RESET	I	Reset input (goes "H" when reset).
29	——	–	Unused (fixed at "H").
30	EX	–	A clock generator is connected to these pins.
31	X	–	
32	VCC	–	Power supply (+5V).
33	——	–	Unused.
34	NTSC/$\overline{\text{PAL}}$	I	NTSC/PAL selection (fixed at "L").
35	——	–	Unused (fixed at "H").
36	——	–	Unused (fixed at "L").
37	JOG	I	"H" is input during CUE/REV.
38	PAUSE	I	Detects STILL ("H") and cancels noise.
39	MOD 1	I	These pins detect the tape speed mode.
40	MOD 0	I	
41	V PB	I	"H" is input during PLAY.
42	——	–	Unused.

IC, MN67481P (IC203)

Pin No.	Pin Name	I/O	Description
1	VDD	–	Power supply (+5V) of digital section.
2	TR MM	I	Tracking monostable multivibrator. Delay time constant for CTL locking position adjustment.
3	SDAT	I	Servo mode setting data input.
4	SCLK	I	Servo mode setting clock input.
5	RCLK	I	Reference timing clock for servo control (PAL : 4.433618MHz).
6	TEST	I	Unused (fixed at "L").
7	VLP	O	Artificial VD output (only durig CUE, REV and STILL).
8	MOD 0	O	Record mode output.
9	MOD 1	O	

	MODE 0	MODE 1
SP mode 3H	"L"	"L"
LP mode 3H	"H"	"L"
EP mode 6H	"H"	"H"

Pin No.	Pin Name	I/O	Description
10	RF SW P	O	RF SW P output (PAL : 25Hz).
11	PWM 2	O	Drum servo phase error output.
12	PWM 1	O	Drum servo speed error output.
13	PWM 3	O	Capstan servo speed error output.
14	PWM 4	O	Capstan servo phase error output.
15	VSS	–	Power supply (GND) of digital section.
16	YPG	I	Drum PG amplifier input.
17	YFG	I	Drum FG amplifier input.
18	FGI	I	Capstan FG amplifier input.
19	I	I	Sets the reference neutral point voltage (+2.5V) of the internal linear amplifier.
20	VRO	O	Reference voltage (set by pin 19) output.
21	CI	I	CTL clamp input.
22	CO	O	CTL amplifier output.
23	CTLG	–	CTL amplifier GND.
24	CTLA	I	Sets the CTL amplifier gain (negative input terminal).
25	CTLH	I	CTL input.
26	A VDD	–	Power supply (+5V) of analog section.
27	V SYN	I	Vertical sync signal input.
28	PG MM	I	Switching position monostable multivibrator. Delay time constant for head switching point adjustment.

5. During loading, play and unloading, observe the tape at the supply and take-up "Guide rollers", "Tape guide" and "Impedance roller". Confirm that there is no curling or creasing etc., as shown in Fig-3.

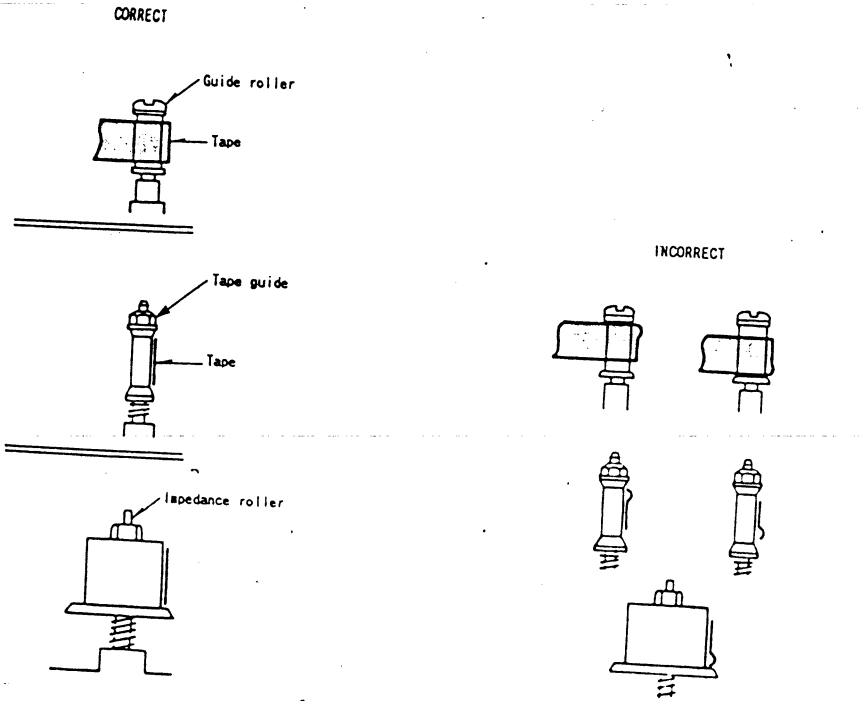


Fig-3

If any curling or creasing is noted, adjust "Tape guide roller" and "Impedance roller" first. In this case, adjust the "Impedance roller" in both PLAY and REV modes so that tape runs as shown in Fig-4.

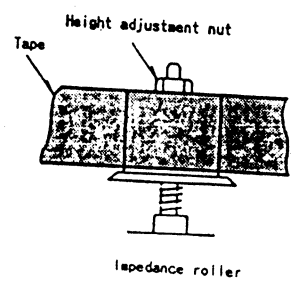


Fig-4

7. Next, adjust the "Guide roller" height. Insert the adjustment driver (J2) into the "Guide roller" top. (See Figure-5)
Adjust the height by turning the driver slightly so that the tape runs on the "Guide roller" as shown in Fig-3, and the lower edge of the tape runs along the "Lead surface of the cylinder".

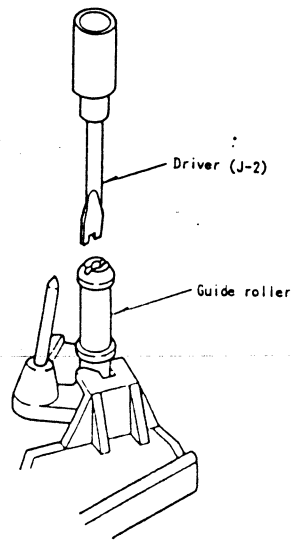


Fig-5

8. After completion of the supply side "Guide roller" adjustments, adjust "Tape guide" so that tape runs as shown in Fig-6 and adjust the take-up side "Guide roller" by using the same proced as as for the supply side adjustments.
In this case, adjust the "Guide roller" height first.

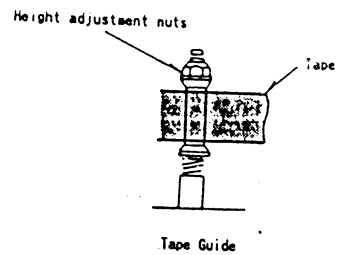
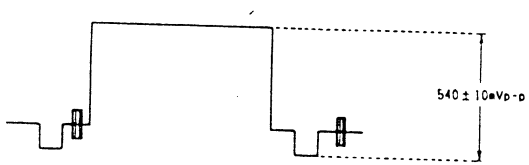


Fig-6

9. Confirm that there is no curling or creasing at the "Impedance roller" (Both PLAY and REV modes). If there is any curling or creasing at the "Impedance roller", adjust the same procedures of Fig-6.

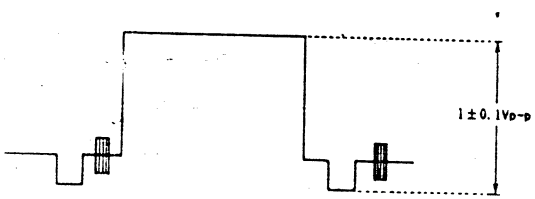
10. Finally, confirm that there is no curling or creasing at the take-up side guide roller and tape guide. If there is any curling or creasing between the take-up side "Guide roller" and the "ACE head", adjust the "ACE head".

(3) AGC Adjustment (A MAIN C.B)
Oscilloscope : IC411 pin ⑥ (TP403)
1) Switch the input selector to LINE.
2) Apply a 100% white signal to the VIDEO IN jack.
3) Adjust SFR413 so that the Y signal is as shown in the figure below in the E-E mode.

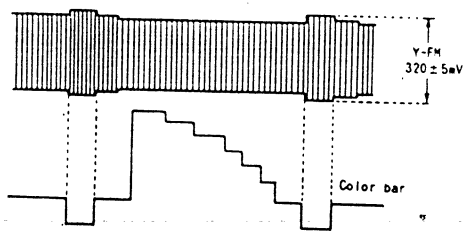


(4) Y-FM Carrier Frequency Adjustment (A MAIN C.B)
Oscilloscope : PIN402 pin ⑤ (TP404)
1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the VIDEO IN jack).
3) Set the VCR to the E-E mode.
4) Adjust SFR411 so that the frequency counter reads 3.8MHz±0.05MHz.

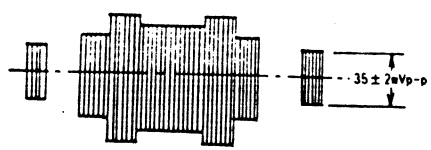
(5) Y-FM Deviation Adjustment (A MAIN C.B)
※The Y FM carrier frequency adjustment should have been completed.
Oscilloscope : VIDEO OUT (TP401)
1) Switch the input selector to LINE.
2) Record a 100% white signal.
3) Play the recorded section and check the Y signal level.
4) If out of specification turn SFR412.
5) Repeat 2)~4) until observe the waveform as indicated below.
※Terminate the VIDEO OUT jack with 75ohms or connect a monitor to it.



(6) REC Y-FM Level Adjustment (A MAIN C.B)
Oscilloscope CH-1 : PIN402 pin ⑤ (TP404)
CH-2 : VIDEO IN (TP405)
1) Switch the input selector to LINE.
2) Apply a color bar signal or 100% white signal to the VIDEO IN jack.
3) Adjust SFR414 so that the synchro signal level of the Y FM level is as shown in the figure below in the E-E mode.



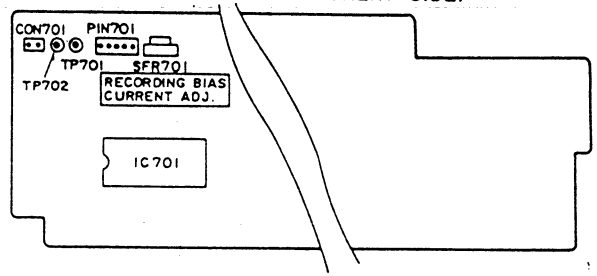
(7) Chroma Recording Current Adjustment (A MAIN C.B)
Oscilloscope : PIN402 pin ③ (TP406)
1) Switch the input selector to LINE.
2) Apply a color bar signal to the VIDEO IN jack.
3) Set the VCR the record mode and adjsut SFR461 so that the burst level is as shown in the figure below.



5.Tuner section adjustment

(1) REG 9V Voltage Adjustment (A MAIN C.B)
Digital voltmeter Positive terminal : VIF801 pin ⑨ (TP801)
Negative terminal : VIF801 pin ⑧ (TP802)
Adjust SFR801 so that the voltage is within the specification, 9.00±0.05V.

C PRE AMP/AUDIO C.B(COMPONENT SIDE)



6.Audio circuit adjustment

(1) Recording Bias Current Adjustment (C PRE AMP/AUDIO C.B)
VTVM HOT terminal : TP701
GND terminal : TP702
1) Switch the input selector to LINE.
2) Set the VCR to the no signal input state (with no input connected to the LINE AUDIO IN jack).
3) Set the VCR to the record mode and adjsut SFR701 so that the bias level is within the specification, 22±1mVRMS.

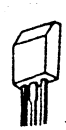
TRANSISTOR ILLUSTRATION

2SA933
2SC1740
2SC2002
2SC3940

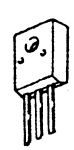
DTA144
DTC144

2SA1048

UN4211

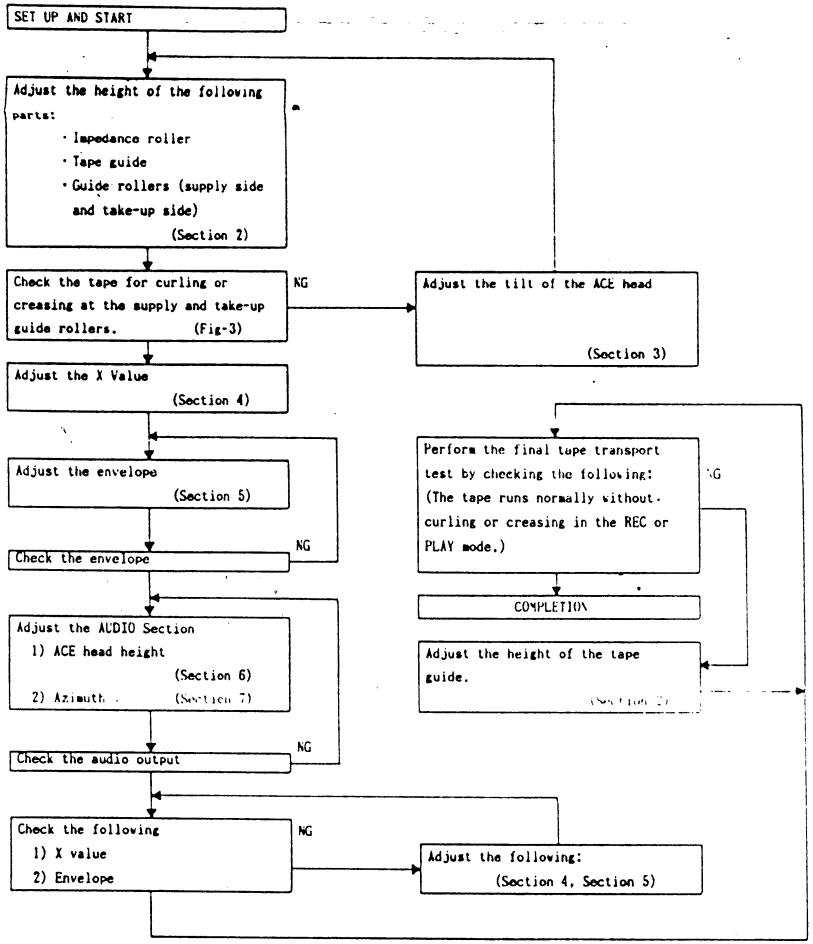


2SB733



2SC4148

1. TAPE TRANSPORT ADJUSTMENT FLOWCHART


SET UP AND START
Adjust the height of the following parts:
· Impedance roller
· Tape guide
· Guide rollers (supply side and take-up side)
(Section 2)
Check the tape for curling or creasing at the supply and take-up guide rollers. (Fig-3)
NG
Adjust the tilt of the ACE head
(Section 3)
Adjust the X Value
(Section 4)
Adjust the envelope
(Section 5)
Check the envelope
NG
Adjust the AUDIO Section
1) ACE head height
(Section 6)
2) Azimuth
(Section 7)
Check the audio output
NG
Check the following
1) X value
2) Envelope
NG
Adjust the following:
(Section 4, Section 5)
Perform the final tape transport test by checking the following:
(The tape runs normally without curling or creasing in the REC or PLAY mode.)
NG
COMPLETION
Adjust the height of the tape guide.

2. TAPE RUNNING POSITION ADJUSTMENT (GUIDE ROLLER/TAPE GUIDE/IMPEDANCE ROLLER)

Set-up

Lift the "Main circuit board".

1. Perform the height adjustment for the following items to obtain the proper tape running position. (See Figure-1)
   1 Impedance roller
   2 Guide roller (Supply side)
   3 Guide roller (Take-up side)
   4 Tape guide

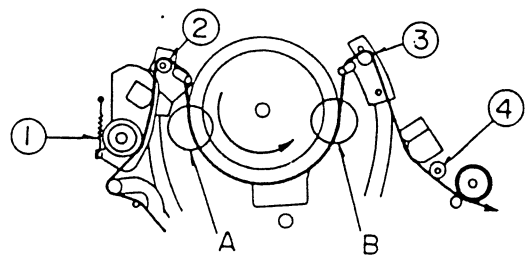


Fig-1

2. Load a blank tape and set it to the PLAY mode. Check the tape transport at points "A" and "B" as shown in Fig-1.

3. Operate it between the PLAY and STOP modes several times.

4. Observe the tape transport at the "Lead surface of the cylinder" during the PLAY mode, and confirm that the tape runs smoothly along the "lead surface of the cylinder" without slipping downward or upward. (See Figure-2)

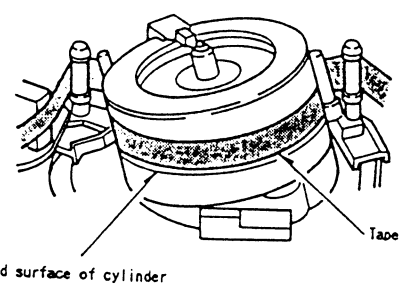
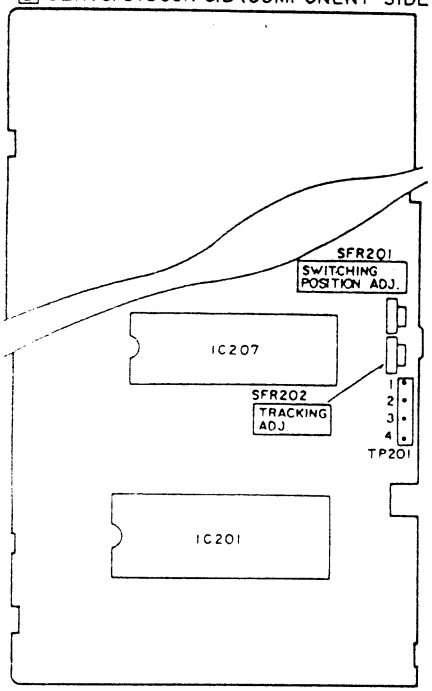


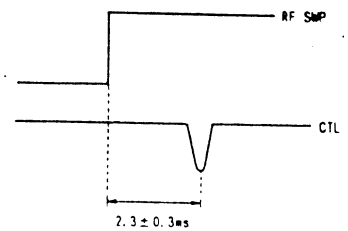
Fig-2

B SERVO/SYSCON C.B (COMPONENT SIDE)

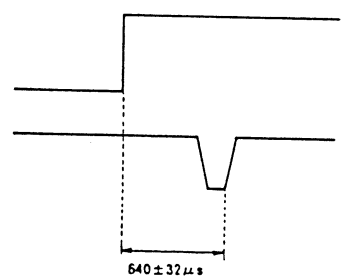


3.Servo circuit adjustment

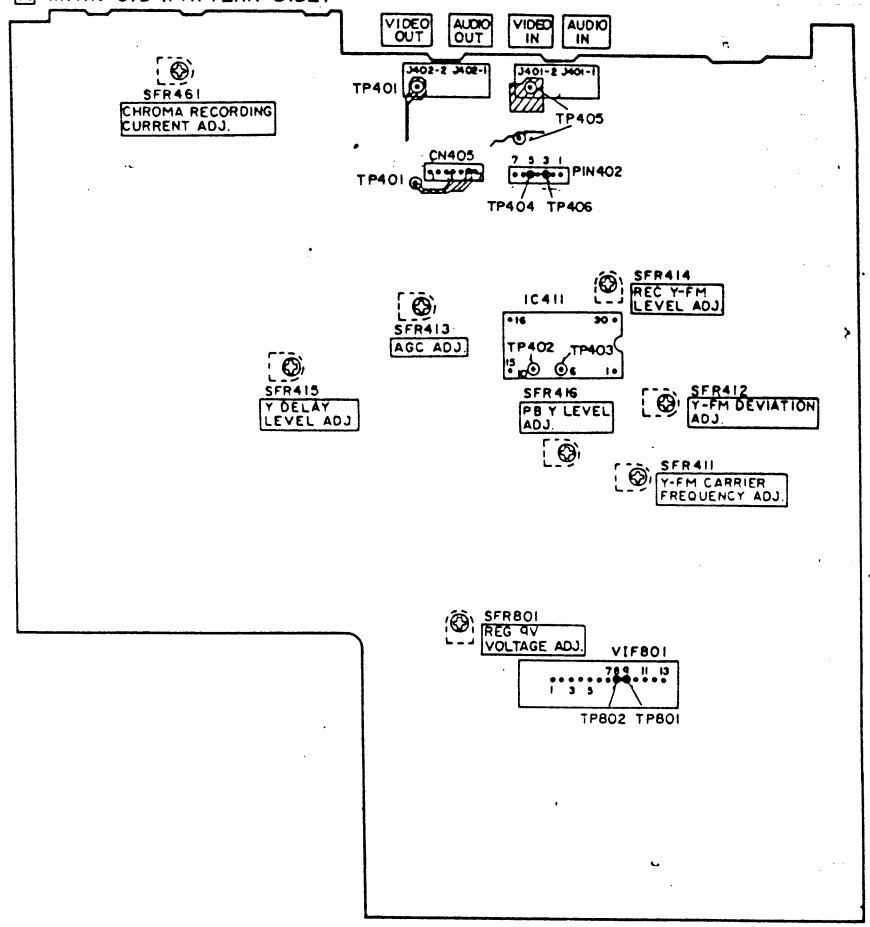
(1) Tracking Adjustment (B SERVO/SYSCON C.B)
Oscilloscope CH-1 : TP201 pin (2) (RF SWP)
CH-2 : TP201 pin (1) (CTL)
1) Set the VCR to the manual tracking mode.
2) Set RV901 (tracking VR) to the center position.
3) Play alignment tape TTV-P1.
4) Adjust SFR202 so that the position of the CTL signal is as shown in the figure below.



(2) Switching Position Adjustment (B SERVO/SYSCON C.B)
Oscilloscope CH-1 : TP201 pin (2) (RF SWP)
CH-2 : TP201 pin (3) (V SYNC)
1) Set the VCR to the manual tracking mode.
2) Set RV901 (tracking VR) to the center position.
3) Play alignment tape TTV-P1.
4) Adjust SFR201 so that the V. SYNC signal is as shown in the figure below.

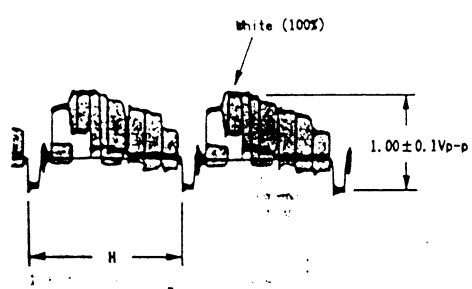


A MAIN C.B (PATTERN SIDE)

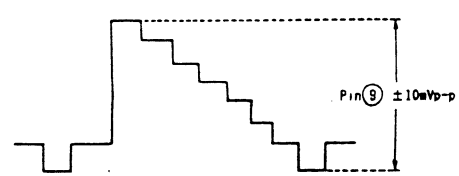


4.Video circuit adjustment

(1) PB Y Level Adjustment (A MAIN C.B)
Oscilloscope : VIDEO OUT (TP401)
1) Play alignment tape TTV-P1.
2) Adjust SFR416 so that the white 100% level is as shown in the figure below.
※Terminate the VIDEO OUT jack with 75ohms or connect a monitor to it.



(2) Y Delay Level Adjustment (A MAIN C.B)
Oscilloscope : IC411 pin (10) (TP402)
1) Play alignment tape TTV-P1.
2) Adjust SFR415 so that the level at pin (10) of IC411 is the same as that of the waveform at pin (9) of IC301.



3. ACE HEAD ADJUSTMENT

1. Load a recorded tape and set the it to PLAY mode.

2. Adjust the height of the edge of the "Audio track" on the "Audio control head" by using the height adjustment nut (A) and the "Tilt adjustment screw" (C) so that the tape transport is smooth at the "Take-up guide pole". Align the "Audio control head" height. (See Figure-7)

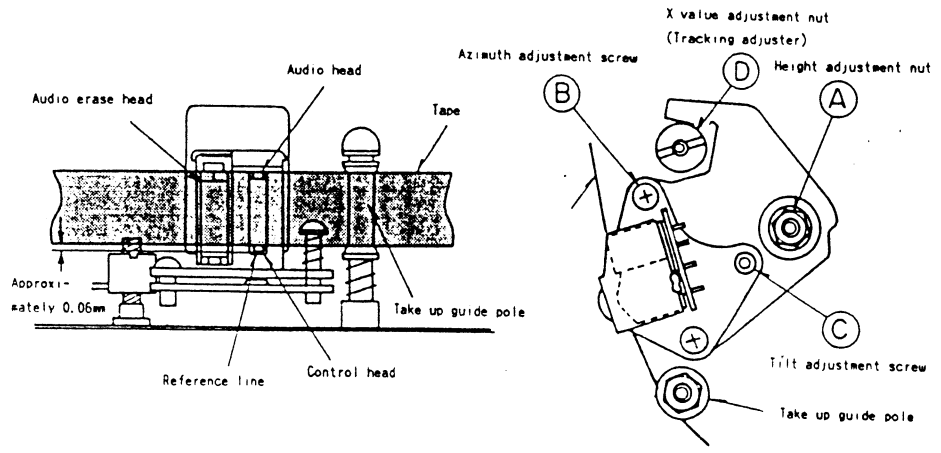


Fig-7

3. No fine adjustment is not required at this time.
The following conditions are sufficient :
a) Proper tape transport between the "Audio control head" and the "Take-up guide pole".
b) [illegible] (See Fig-8).

4. X VALUE ADJUSTMENT (PB FM PEAK ADJUSTMENT)

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
X value adjustment nut	Maximum level (CH1 PB Y FM signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

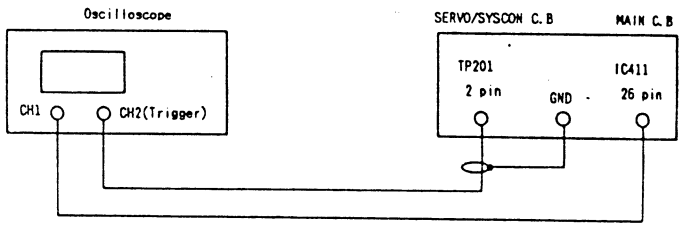


Fig-8

1. Connect the equipment as shown in Fig-8.

2. Adjust RV901 (Tracking volume) to its center position. (clockwise)

3. Adjust the "X value adjustment nut (D)" for maximum PB FM Signal for CH1 by using TTV-P2 test tape. (See Figure-9)

4. After adjusting the "X value", check that the output level of the PB FM Signal for CH1 changes symmetrically by rotating RV901 (Tracking volume).

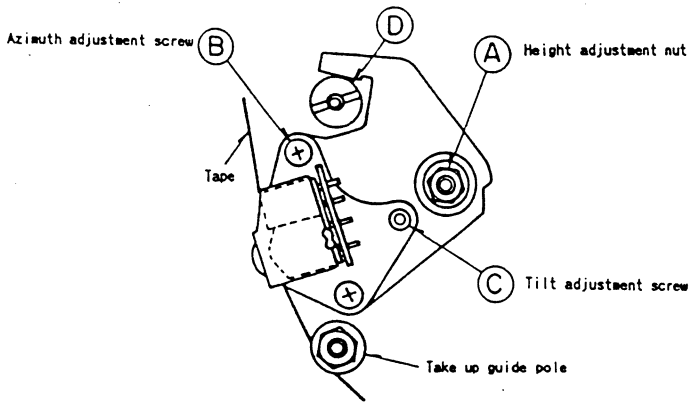


Fig-9

5. ENVELOPE WAVE FORM ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
MAIN C.B IC411 26 pin SERVO/SYSCON C.B TP201 2 pin	Oscilloscope	PLAY (SP) MODE Test tape TTV-P2

ADJ. Location	ADJ. Value
Guide rollers	Maximum level and correct waveform (PB Y FM Signal)

TEST EQUIPMENT CONNECTING DIAGRAMS

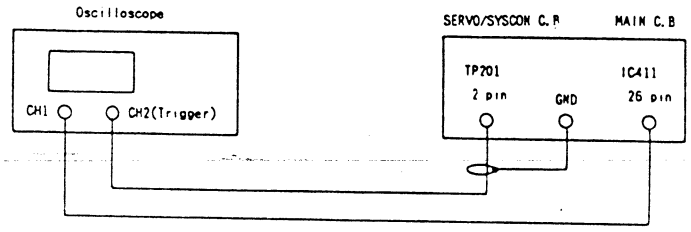


Fig.-10

1. Connect equipment as shown in Fig-10.

2. Playback the test tape TTV-P2.

3. The envelope waveform can be performed by adjusting the height of both the supply side and take-up side "Guide rollers".
Finaly adjust the height of "Guide rollers" so that the envelope waveform is as flat as possible.

4. Set RV901 (Tracking Volume) to its center position and confirm that a nearly maximum level is obtained.
Then rotate the RV901 (Tracking Volume) in both directions while adjusting the height of "Guide rollers", in order to obtain the envelope waveform which is as flat as possible.
If the tape is above or lower the helical tape position, the envelope waveforms will take the shape as shown in Fig-11 and Fig-12.

5. Adjust for maximum flatness of the envelope waveform according to the Fig-11 and Fig-12.

6. After adjustment, rotate RV901 (Tracking Volume) counterclockwise and clockwise, and check that the waveform changes symmetrically.

7. Check the tape curl. (Refer to Section 2)

	Tape is too high	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
Adjustment	Supply side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated clockwise direction (lowers "Guide roller") to flatten envelope.

Fig-11

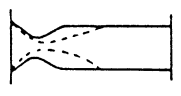
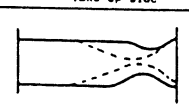
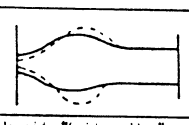
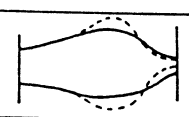
	Tape is too low	
	Supply side	Take-up side
When the tracking volume is rotated counterclockwise and clockwise directions.		
		
Adjustment	Supply side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.	Take-up side "Guide roller" rotated counterclockwise direction (raises "Guide roller") to flatten envelope.

Fig-12

6. ACE HEAD HEIGHT/ACE HEAD TILT ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P1
ADJ. Location	ADJ. Value	
Height adjustment nut Azimuth adjustment screw	Maximum level (AC voltmeter)	
Tilt adjustment screw		

TEST EQUIPMENT CONNECTING DIAGRAMS

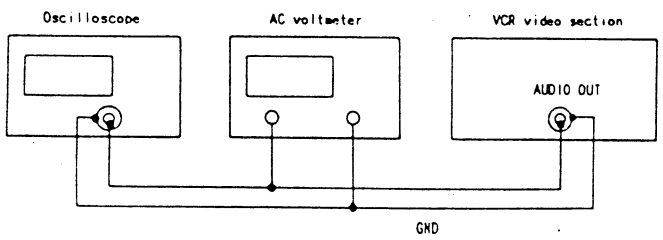


Fig-13

1. Connect equipment as shown in Fig-13.

2. Confirm that the running between the "Take-up guide roller" and the "ACE head" has no slack. If the tape has slack, take it up by turning the "Tilt adjustment screw Ⓒ". (See Figure-15)
   Then readjust "Guide roller " height in section 2 and the "X value" in section 4.

3. After confirming on the oscilloscope that a 1kHz audio signal is being output by playing back TTV-P1 test tape, adjust the "Height adjustment nut Ⓐ" so that the AC voltmeter's reading is brought to its maximum level. (See Figure-7)

4. Adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading is brought to its maximum level.
   (See Figure-7)

7. ACE HEAD AZIMUTH ADJUSTMENT

MEASURING METHOD

Measuring Point	Measuring Equip.	ADJ. Condition
AUDIO OUTPUT	Oscilloscope AC voltmeter	PLAY (SP) MODE Test tape TTV-P2
ADJ. Location	ADJ. Value	
Azimuth adjustment nut	Maximum level (AC voltmeter)	

Fig-14

TEST EQUIPMENT CONNECTING DIAGRAMS

See Figure-13.

1. After confirming on the oscilloscope that a 6kHz audio signal is being output by playing back TTV-P2 test tape, adjust the "Azimuth adjustment screw Ⓑ" so that the AC voltmeter's reading or oscilloscope waveform is brought to its maximum level. (See Figure-15)

Note : Fix the screw Ⓑ and Ⓒ with lock paint after readjustment.

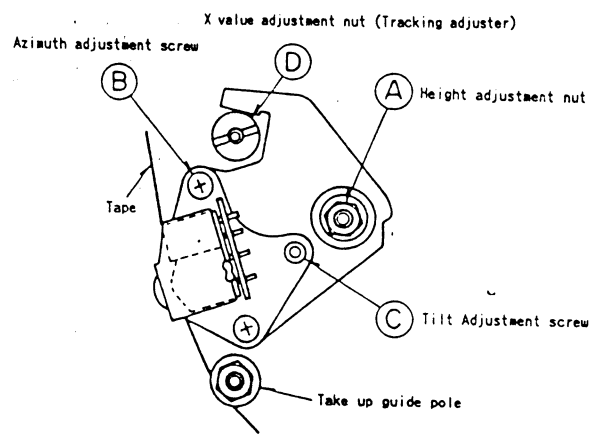
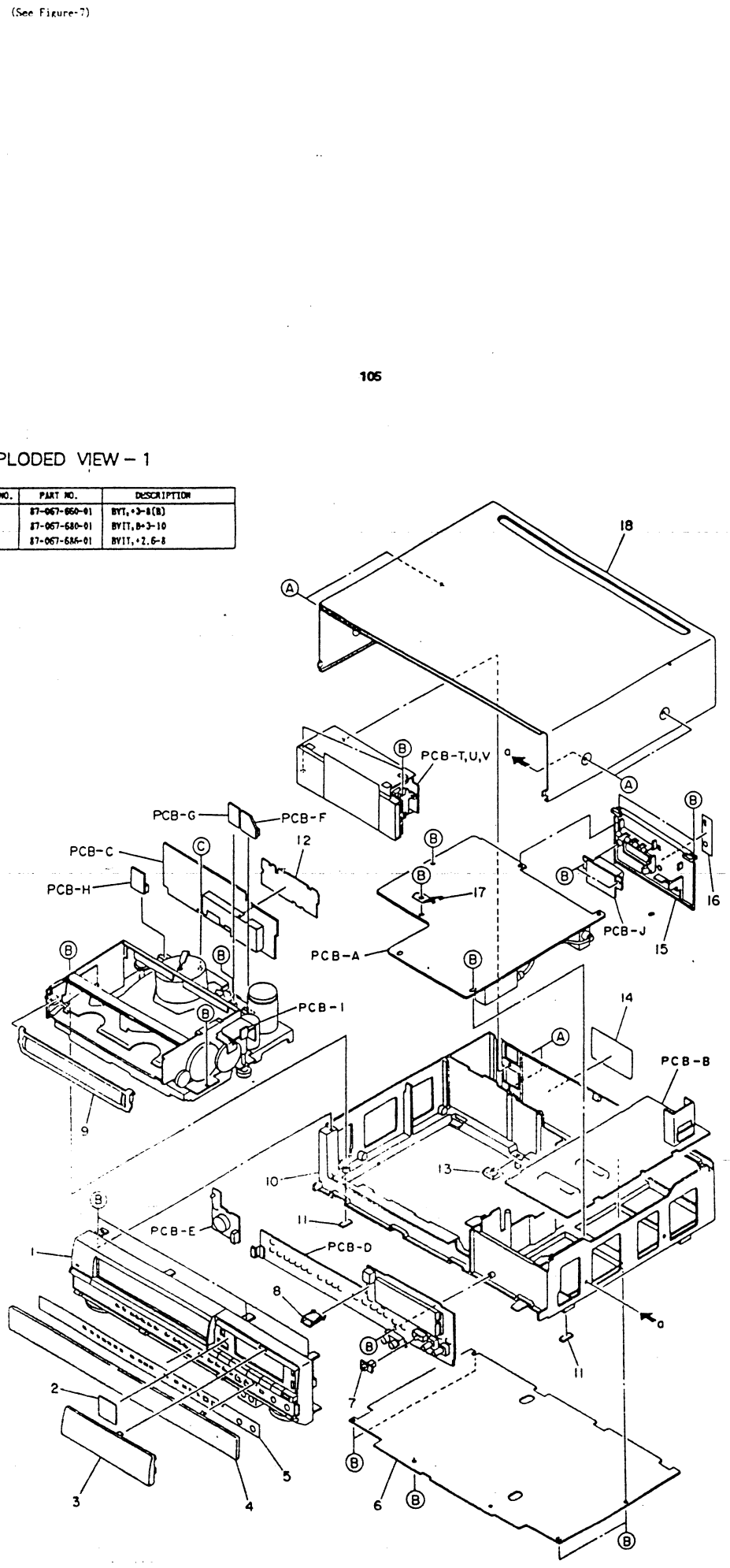


Fig-15

EXPLODED VIEW – 1

REF.NO.	PART NO.	DESCRIPTION
A	87-067-650-01	BVT,+3-8(B)
B	87-067-680-01	BVIT,B+3-10
C	87-067-686-01	BVIT,+2.6-8

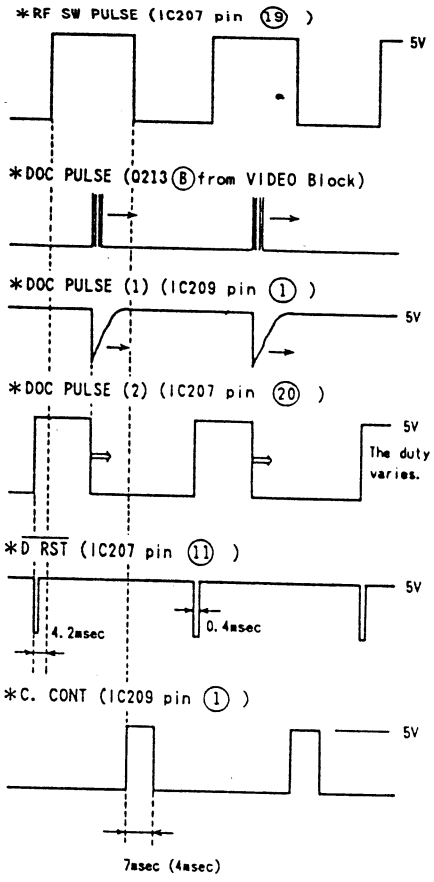


MECHANICAL PARTS LIST

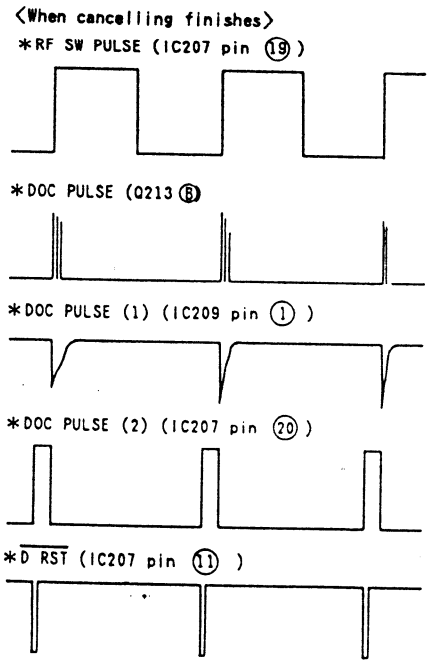
PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	1-1	*09-057-051-010	CABINET FRONT ASSY	*	1
	1-2	*89-JU5-008-010	FILTER(G50,G53,55)	*	1
	1-2	*89-JU6-004-010	FILTER(G51)	*	1
	1-3	*89-JU5-003-010	WINDOW	*	1
	1-4	*89-JU5-002-010	DOOR(G50GPSH)	*	1
	1-4	*89-JU5-021-110	DOOR(G50D1PH)	*	1
	1-4	*89-JU5-031-010	DOOR(G501PF)	*	1
	1-4	*89-JU6-001-010	DOOR(G51GPSE)	*	1
	1-4	*89-JU4-006-010	DOOR(G53AGPSE)	*	1
	1-4	*89-JU4-001-010	DOOR(G55GPSE)	*	1
	1-4	*89-JU4-004-010	DOOR(G551PK)	*	1
	1-4	*89-JU6-009-010	DOOR(DK510GPSKSE)	*	1
	1-5	*89-JU5-007-010	PLATE,TIMER(G50,G53,G55)	*	1
	1-5	*89-JU6-002-010	PLATE,TIMER(G51,DK510GPSKSE)	*	1
	1-6	*89-JU5-020-010	BOTTOM,PLATE	*	1
	1-7	*89-JU5-015-010	KNOB,SLIDE(G50,G53,G55)	*	1
	1-8	*89-JU7-201-010	REFLECTOR(G50,G53,G55)		1
	1-9	*89-JU7-003-110	DOOR,CASSETTE(G50,G53)		1
	1-9	*89-JU6-003-010	DOOR,CASSETTE(G51)	*	1
	1-9	*89-JU4-008-010	DOOR,CASSETTE(G55)	*	1
	1-9	*89-JU6-008-010	DOOR,CASSETTE(DK510GPSKSE)	*	1
	1-10	*89-JU5-010-010	CABINET,MAIN	*	1
	1-11	*89-JU5-018-010	FELT,FOOT	*	2
	1-12	---	SHIELD,RP2		1
	1-13	*89-JU5-217-010	CLAMP EARTH(G50,G51,DK510GPSKSE)	*	1
	1-14	*89-JU5-014-010	PLATE,SPEC(G50GPSH)	*	1
	1-14	*89-JU5-027-010	PLATE,SPEC(G50D1PH)	*	1
	1-14	*89-JU5-032-010	PLATE,SPEC(G501PF)	*	1
	1-14	*89-JU6-005-010	PLATE,SPEC(G51GPSE)	*	1
	1-14	*89-JU4-009-010	PLATE,SPEC(G53AGPSE)	*	1
	1-14	*89-JU4-011-010	PLATE,SPEC(G55GPSE)	*	1
	1-14	*89-JU4-012-010	PLATE,SPEC(G55AGPSE)	*	1
	1-14	*89-JU4-0[illegible]-010	PLATE,SPEC(G551PK)	*	1
	1-14	*89-JU6-00[illegible]-010	PLATE,SPEC(DK510GPSKSE)	*	1
	1-15	*89-JU5-011-210	PANEL,JACK	*	1
	1-15	*89-JU4-003-210	PANEL,JACK(G51,G53,G55,DK510GPSKSE)	*	1
	1-16	*89-JU5-024-010	PLATE,JACK	*	1
	1-16	*89-JU5-025-010	PLATE,JACK(G50D1PH)	*	1
	1-16	*89-JU6-007-010	PLATE,JACK(DK510GPSKSE)	*	1
	1-17	*89-JU7-211-110	PLATE,EARTH		1
	1-18	*89-JU5-009-010	CABINET,STEEL	*	1

NOISE CANCELLER TIMING CHART

<During cancelling>



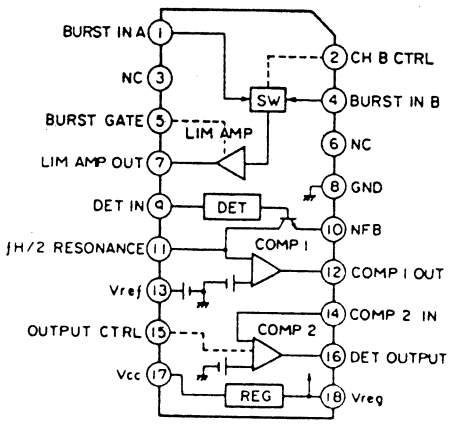
<When cancelling finishes>



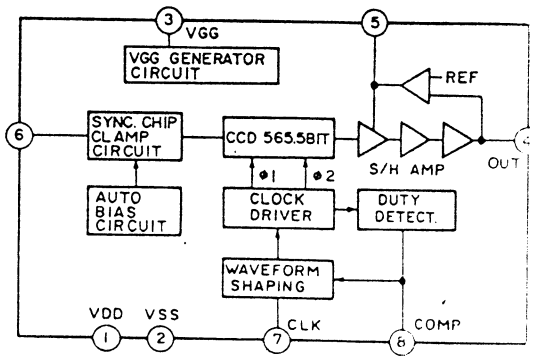
※This is a wave form when a noise bar is moved by slightly turning the capstan motor gradually using the C. CONT pulse.

IC BLOCK DIAGRAM — 1

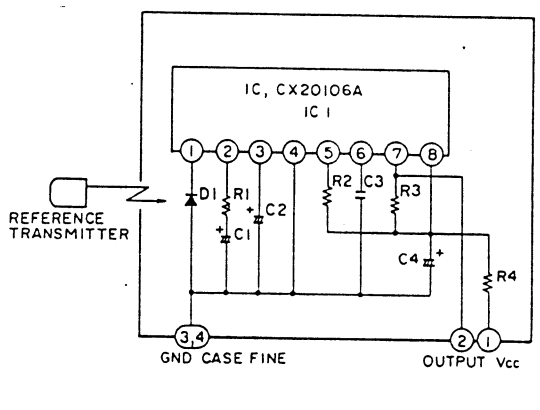
IC,BA7025L



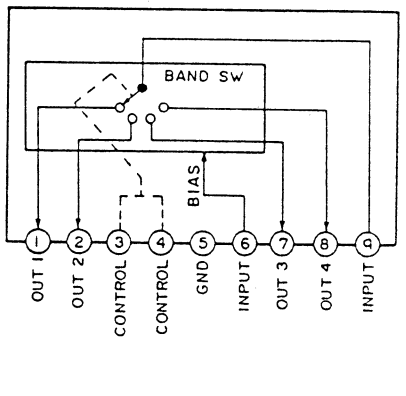
IC,LC8992



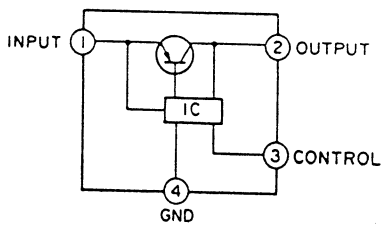
IC,SBX1610



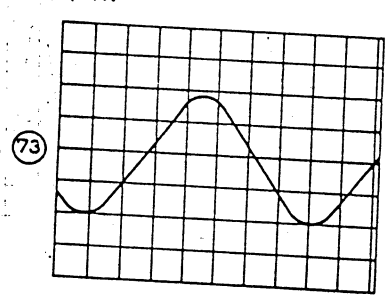
IC,LA7910



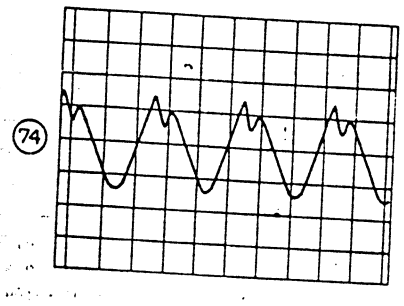
IC,PQ09R05



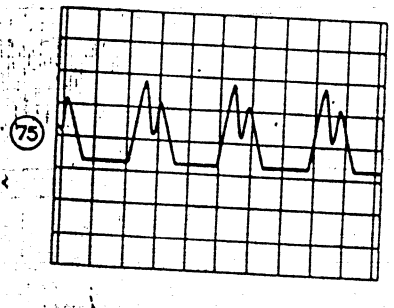
T701 pin ⑥
20V/div.
2μs/div.



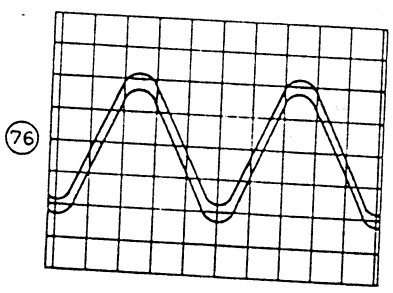
Q701 base
1V/div.
5μs/div.



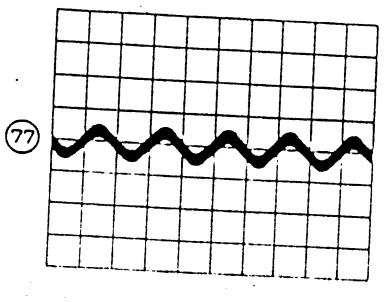
Q701 emitter
500mV/div.
5μs/div.



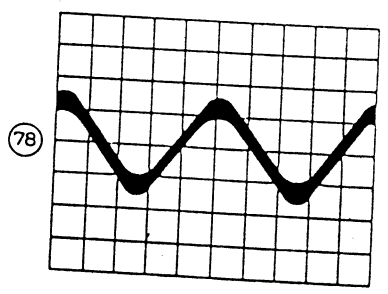
IC701 pins ⑦ and ⑧
20mV/div.
200μs/div.



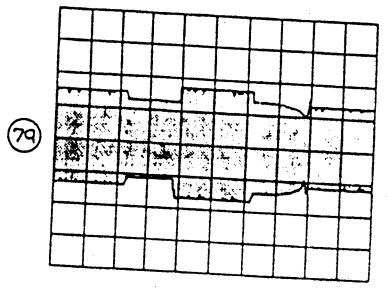
• The wave form shown in the photo on the left is at pin ⑪ of IC701.
• IC701 pins ⑭ to ⑰ are 900mVp-p.
• The specification of the EE level is -8.5 ±1dBs when a 1kHz−10dBs signal is input.
20mV/div.
500μs/div.



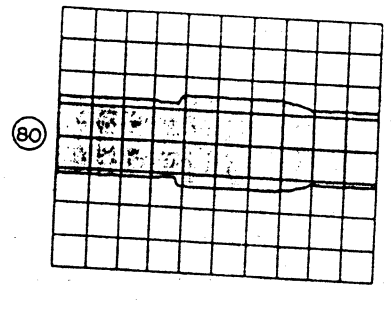
• The wave form shown in the photo on the left is at pins ⑳ and ㉓ of IC701.
• IC701 pin ㉕ is 1.53Vp-p.
50mV/div.
200μs/div.



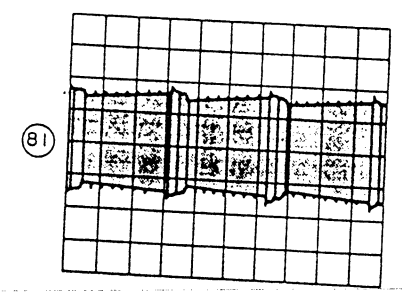
PIN602 pin ① (PB)
5ms/div.
100mV/div.



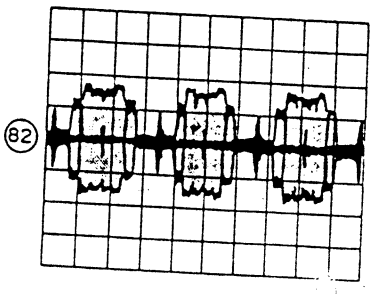
PIN602 pin ⑦ (PB)
5ms/div.
200mV/div.



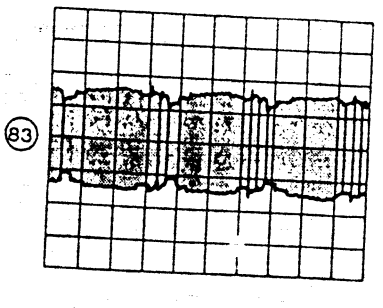
PIN602 pin ⑤ (REC)
20μs/div.
100mV/div.



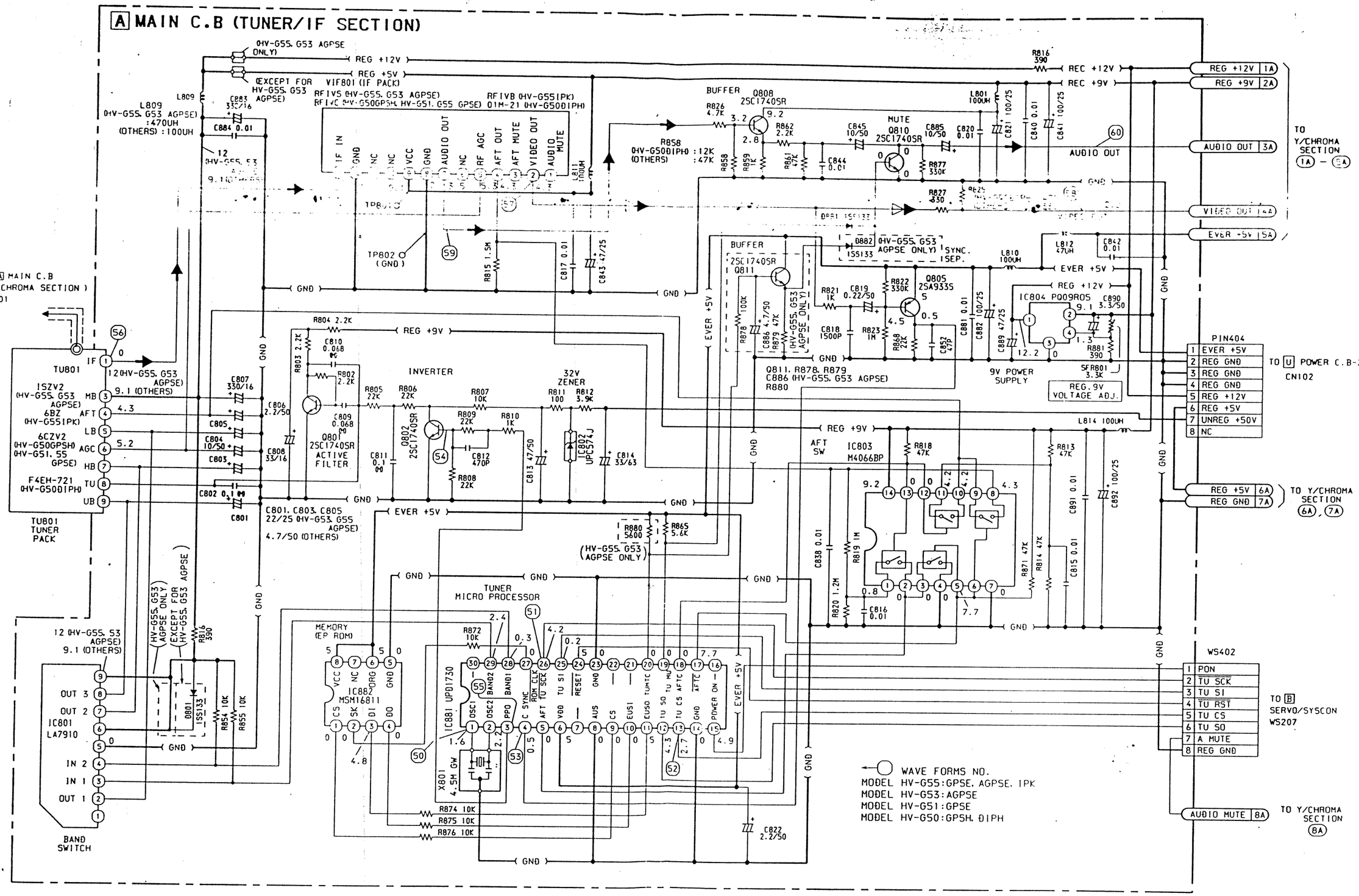
PIN602 pin ③ (REC)
20μs/div.
20mV/div.



IC610 pin ⑱ (REC)
20μs/div.
50mV/div.

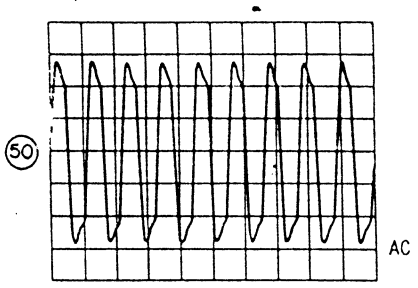


A MAIN C.B (TUNER/IF SECTION)

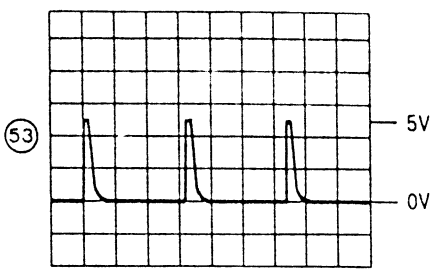


TUNE \ WAVE FORM

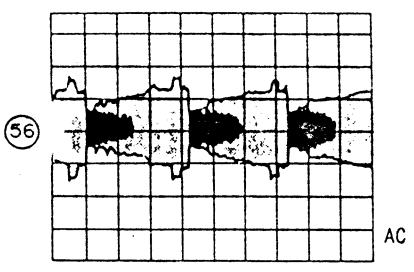
IC881 pin (1)
Oscillated by the microprocessor
1V/div.
200ns/div.



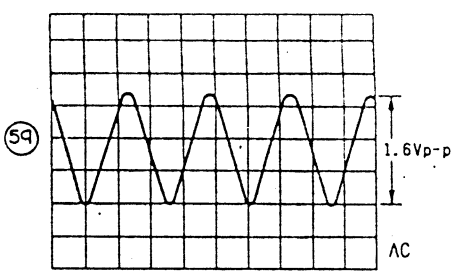
IC881 pin (4)
H. sync
2V/div.
20µs/div.



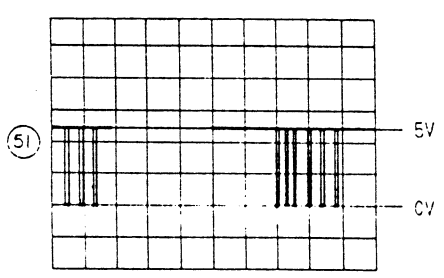
TU801 pin (1)
IF signal
P: Color bar signal
50ms/div.
20µs/div.



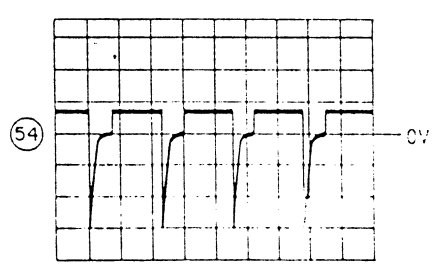
VIF801 pin (7)
TU AUDIO OUT
When modulated
at 400Hz and 50kHz
500mV/div.
1ms/div.



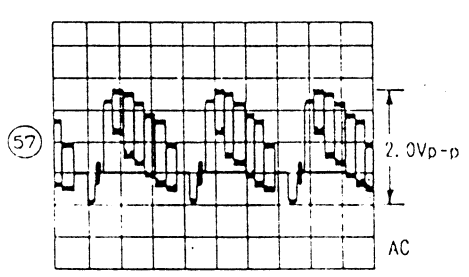
IC881 pin (26)
Clock of microprocessor
2V/div.
20ms/div.



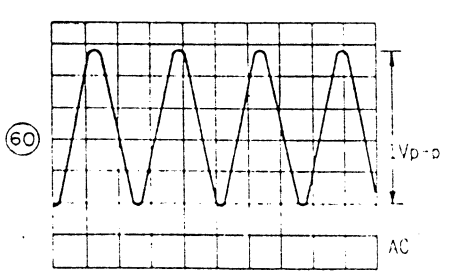
Q802 base
1V/div.
50µs/div.



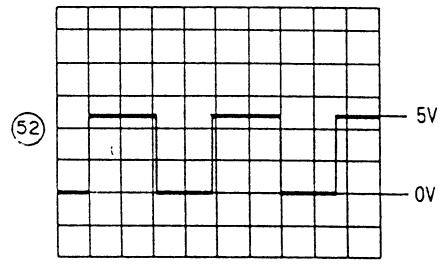
VIF801 pin (2)
500mV/div.
20µs/div.



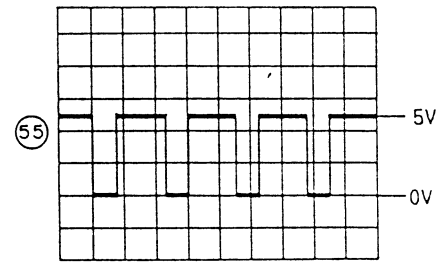
TP804
TU AUDIO OUT
When modulated
at 400Hz and 50kHz
200mV/div.
1ms/div.



IC881 pin (13)
Microprocessor chip select
2V/div.
20ms/div.



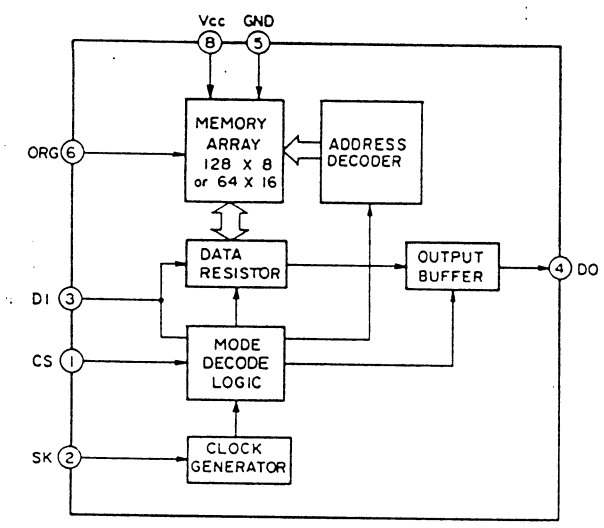
IC881 pin (3)
Pulse for generating a tuning voltage
The pulse width varies for different channels.
2V/div.
50µs/div.



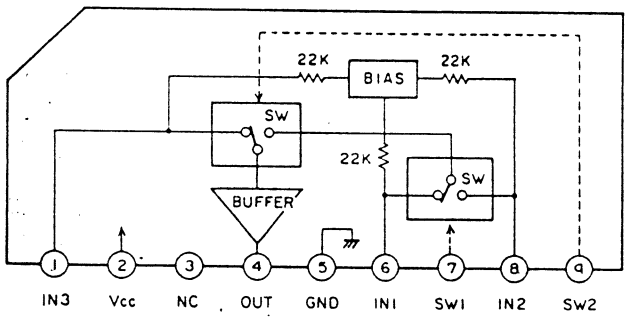
TP805
TU VIDEO OUT 75Ω TERMINATE
500mV/div.
20µs/div.

IC BLOCK DIAGRAM – 2

IC,MSM16811



IC,LVA522S



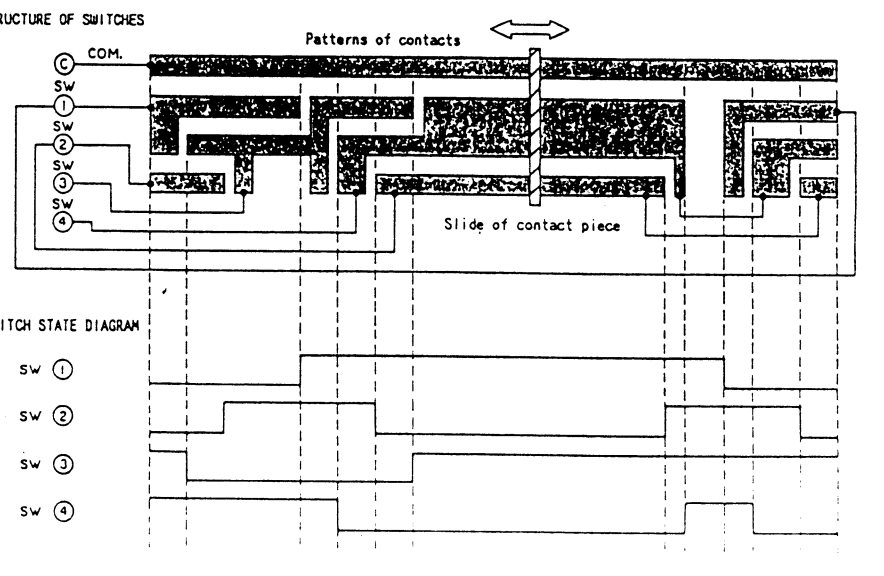
CONTROL INPUT
TRUTH TABLE

SW1	SW2	OUT
L	L	IN1
H	L	IN2
L	H	IN3

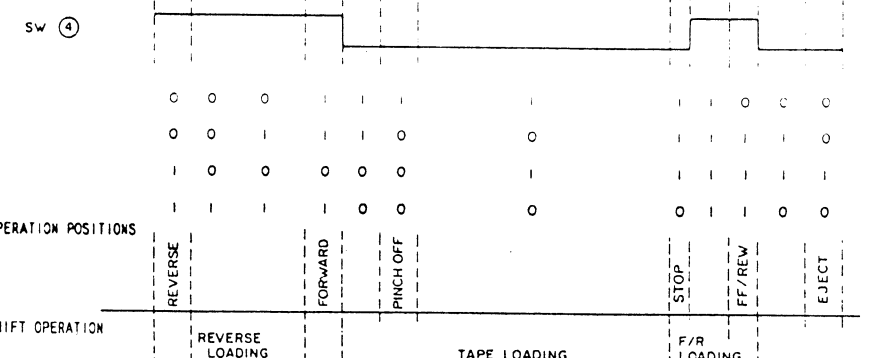
SYSTEM SWITCH MODE

※When SYSTEM CONTROL IC has run away SYSTEM CONTROL IC will not accept any mode.

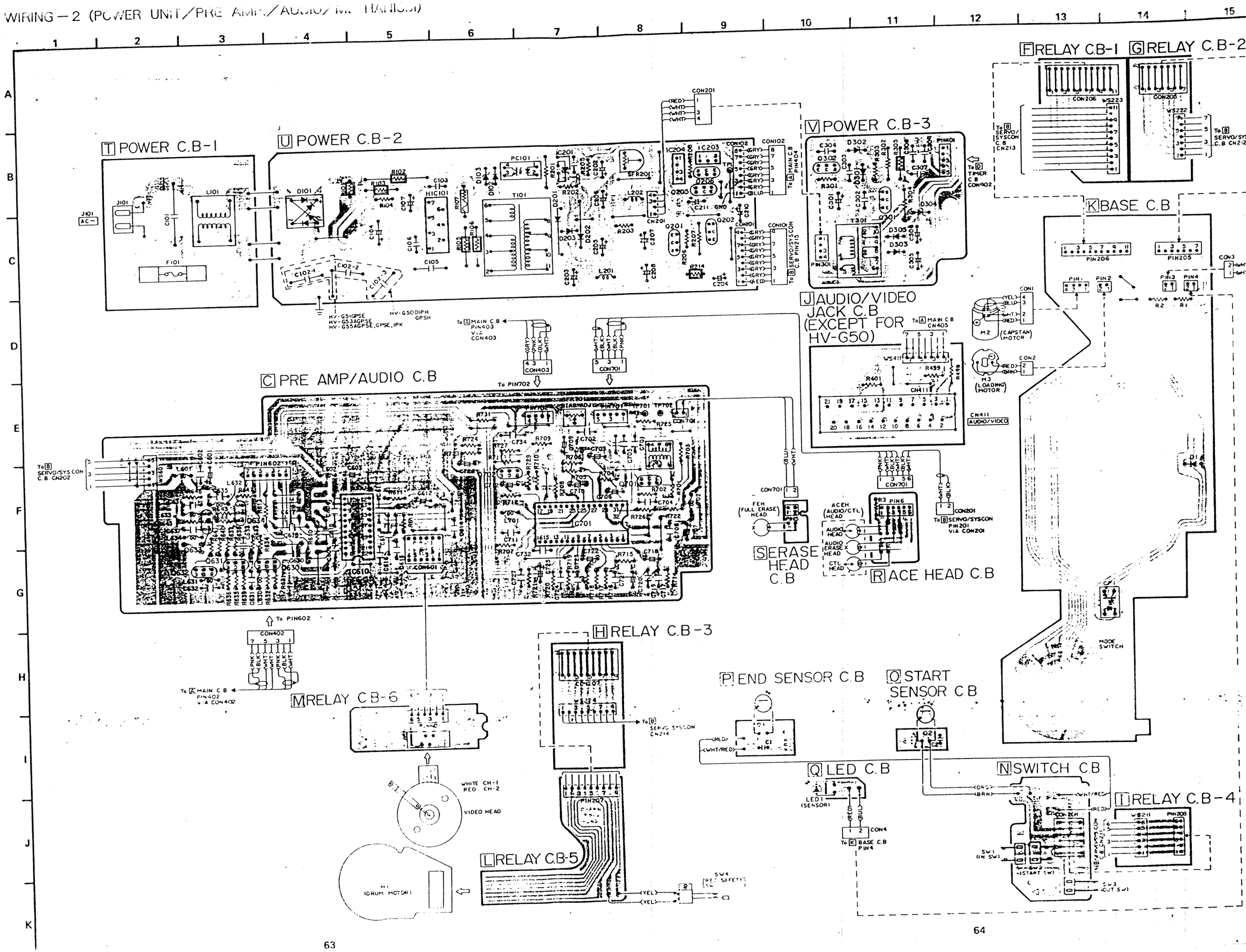
STRUCTURE OF SWITCHES

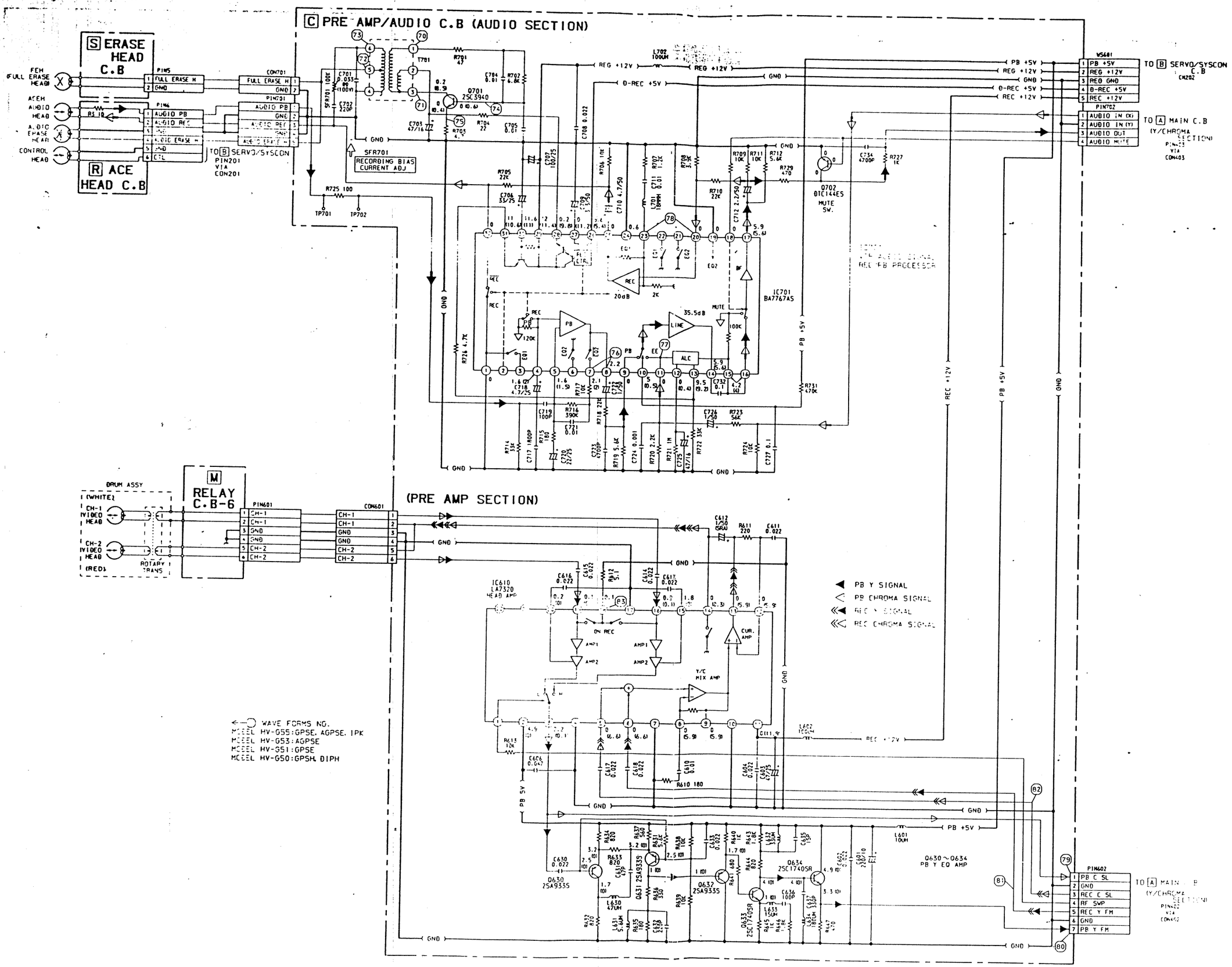


SWITCH STATE DIAGRAM



SWITCH				Position
SW1	SW2	SW3	SW4	
0	0	1	0	Front loading, Eject
0	1	1	0	Intermediate
0	1	1	1	F.F, REW
1	1	1	1	Intermediate
1	1	1	0	Stop
1	0	1	0	Tape loading
1	0	0	0	Gear change
1	1	0	0	Intermediate
1	1	0	1	Play (Pause)
0	1	0	1	Intermediate
0	0	0	1	Intermediate
0	0	1	1	Reset

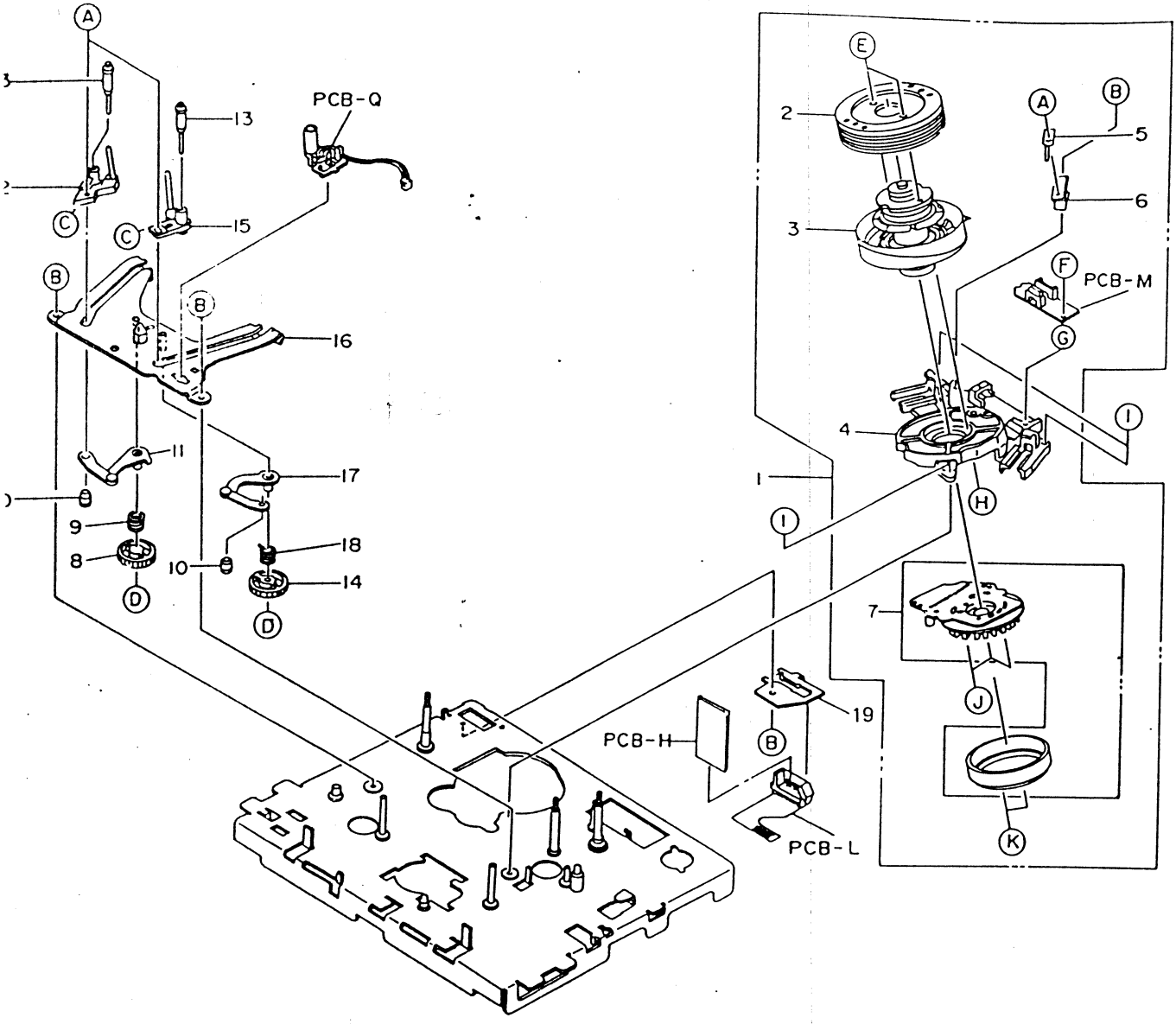

T POWER C.B-1
U POWER C.B-2
V POWER C.B-3
F RELAY C.B-1
G RELAY C.B-2
K BASE C.B
C PRE AMP/AUDIO C.B
J AUDIO/VIDEO JACK C.B (EXCEPT FOR HV-G50)
S ERASE HEAD C.B
R ACE HEAD C.B
H RELAY C.B-3
M RELAY C.B-6
L RELAY C.B-5
P END SENSOR C.B
O START SENSOR C.B
Q LED C.B
N SWITCH C.B
I RELAY C.B-4
HV-G51GPSE
HV-G53AGPSE
HV-G55AGPSE,GPSE,IPK
HV-G50DIPH
GPSH
WHITE CH-1
RED CH-2
VIDEO HEAD
M1 (DRUM MOTOR)
M2 (CAPSTAN MOTOR)
M3 (LOADING MOTOR)
MODE SWITCH



← WAVE FORMS NO.
MODEL HV-G55:GPSE, AGPSE, IPK
MODEL HV-G53:AGPSE
MODEL HV-G51:GPSE
MODEL HV-G50:GPSH, DIPH

EXPLO D VIEW – 2

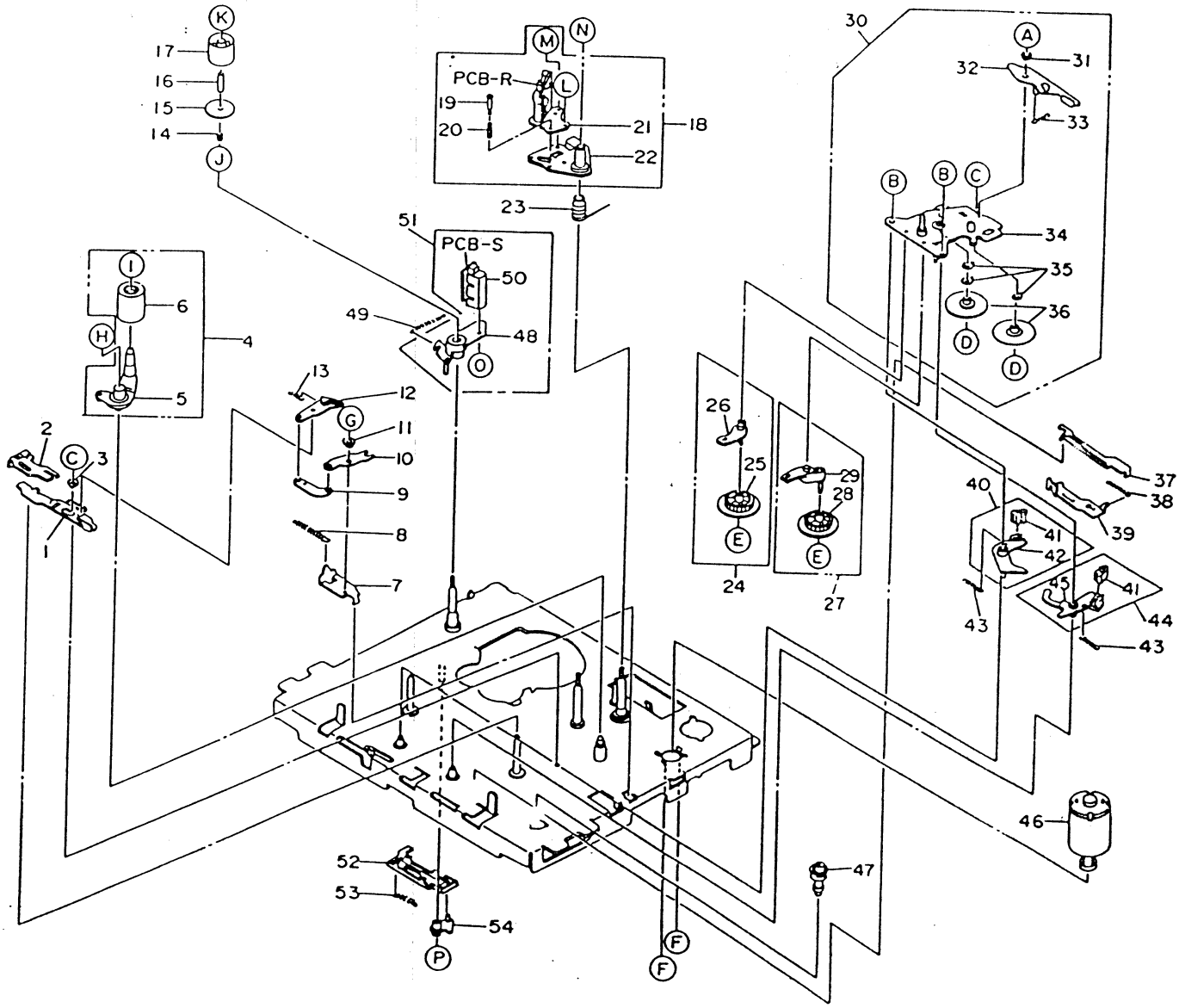
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	665-000-00	CUP SCREW 2.6×3	E	S9-972-000-00	BIND TAMS SCREW 3×8	I	S9-205-000-00	C TAPPING SCREW 3×10
B	192-000-00	C TAPPING SCREW 2.6×5	F	S9-973-000-00	W TAMS SCREW 2.6×6	J	S9-050-000-00	SCREW 2.6×2.0
C	S9-952-000-00	SET SCREW 2.0×3(PLANE)	G	S9-715-000-00	WASHER 2.6	K	S9-098-000-00	TAMS SCREW 2.6×6
D	S9-884-000-00	PW CUT 2.6×6×0.5	H	S9-552-000-00	SCREW(FOR CAMERA) 2×5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1	*S8-059-013-090	CYLINDER ASSY		1
	2	S8-059-010-160	UPPER DRUM		1
	3	*S8-059-013-040	LOWER DRUM ASSY		1
	2-4	*S8-059-010-010	CYLINDER MOUNT		1
	2-5	*S8-059-010-230	DRUM EARTH		1
	2-6	*S8-059-010-020	DRUM EARTH BRACKET		1
	2-7	S6-004-090-010	MOTOR TM82		1
	2-8	*S8-059-030-060	T LOADING GEAR L		1
	2-9	*S8-059-030-080	LOADING GEAR SPRING L		1
	2-10	*S8-059-030-140	LOADING BOSS		2
	2-11	*S8-059-035-020	LOADING PLATE L SEMI ASSY		1
	2-12	*S8-059-030-040	LOADING BLOCK L		1
	2-13	*S8-000-030-370	ROLLER POST ST		1
	2-14	*S8-059-030-070	T LOADING GEAR R		1
	2-15	*S8-059-030-050	LOADING BLOCK R		1
	2-16	*S8-059-035-010	LOADING BASE SEMI ASSY		1
	2-17	*S8-059-035-030	LOADING PLATE R SEMI ASSY		1
	2-18	*S8-059-030-090	LOADING GEAR SPRING R		1
	2-19	---	CONNECTOR BRACKET		1

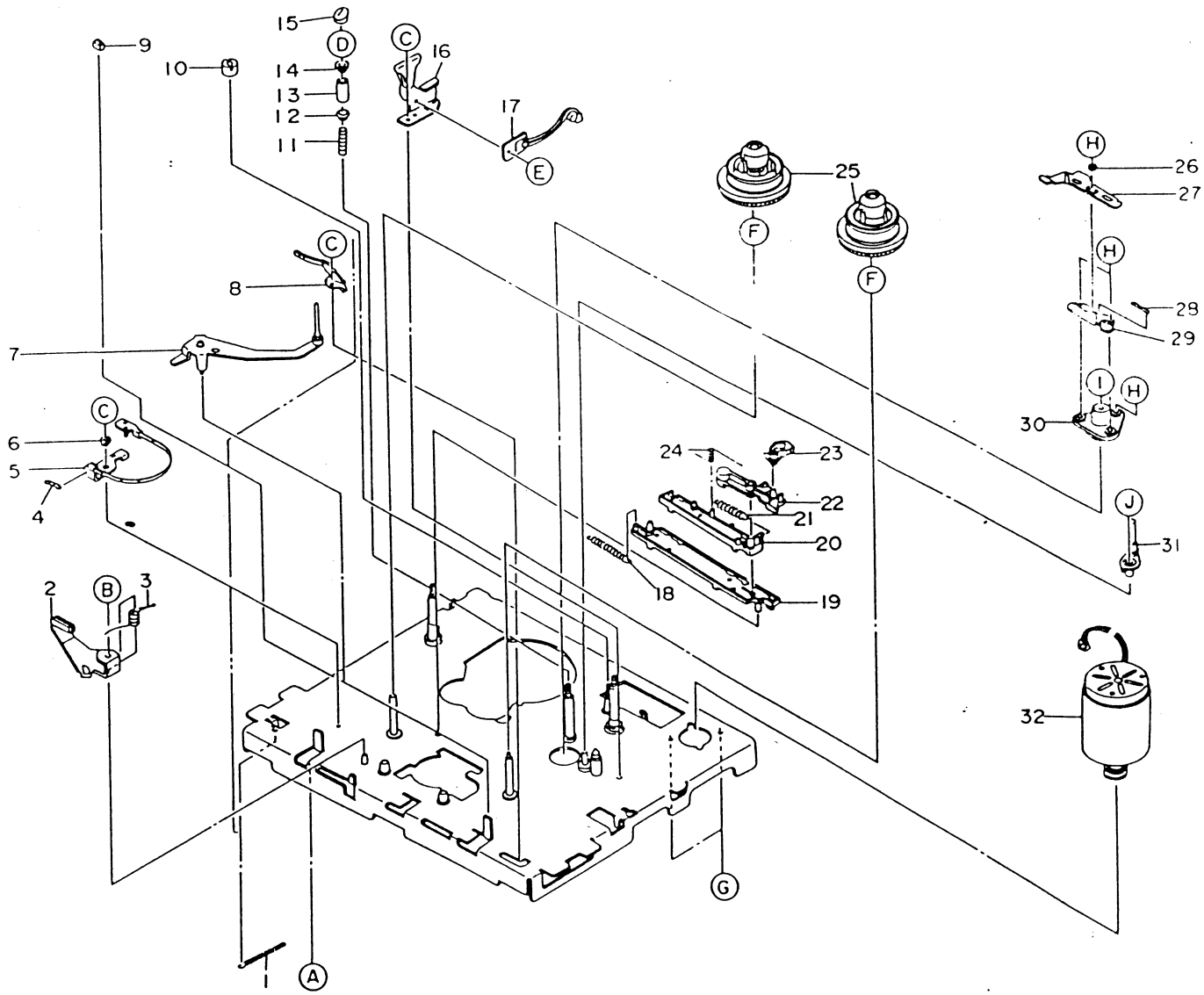
EXPLODED VIEW – 4

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-974-000-00	SL FH SCREW 2×3	G	S9-096-000-00	TAMS SCREW 2.6×4	M	S9-705-000-00	LONG LOCK SCREW 2.6×7
B	S9-097-000-00	TAMS SCREW 2×4	H	S9-999-030-00	PW CUT 5×8×0.5	N	S9-953-000-00	NYLON NUT M3
C	S9-192-000-00	C TAPPING SCREW 2.6×5	I	S9-038-000-00	SCREW 2.6×4	O	S9-953-000-00	SCREW FLANGE 2×3
D	S9-500-000-00	E RING S1.5	J	S9-387-000-00	PLANE WASHER 3×8×0.5	P	S9-876-000-00	PW 2.1×5×0.5CUT
E	S9-743-000-00	PW CUT 1.6×3.8×0.3	K	S9-953-000-00	NYLON NUT M3			
F	S9-105-000-00	C TAPPING SCREW 3×4	L	S9-999-000-25	SCREW 3.6 (SHAPE TYPE)			



EXPLODED VIEW – 3

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-999-030-15	PW CUT 2.1×4×0.5	E	S9-096-000-00	TAMS SCREW 2.6×4	I	S9-999-060-00	NYLON WASHER 2.92×5×0.5
B	S9-876-000-00	PW CUT 2.1×5×0.5	F	S9-912-000-00	PW 3.1×6×0.5	J	S9-884-000-00	PW 2.6×6×0.5CUT
C	S9-191-000-00	C TAPPING SCREW 2.6×4	G	S9-105-000-00	TAMS SCREW 3×4			
D	S9-453-000-00	NUT 3.0	H	S9-495-000-00	C TAPPING SCREW 2.6×8			

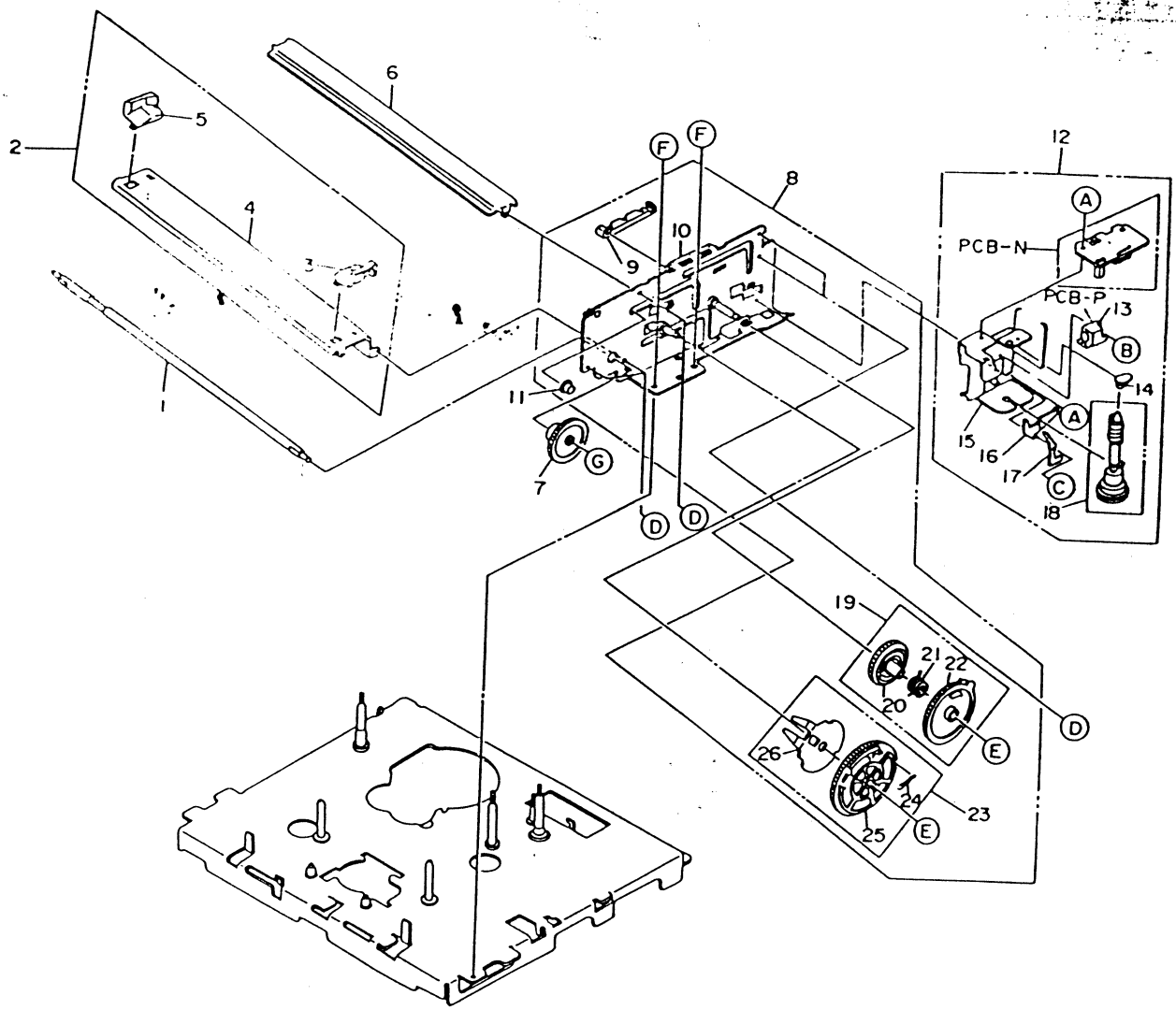


PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	3-1	*S8-059-080-200	[illegible]		1
	3-2	*S8-059-103-04[illegible]	[illegible]		1
	3-3	*S8-059-100-220	[illegible] BRAKE SPRING		1
	3-4	*S8-059-080-170	BAND HOLDER SPRING		1
	3-5	*S8-059-083-020	BT BAND ASSY		1
	3-6	*S8-059-080-150	BAND HOLDER COLLAR		1
	3-7	*S8-059-085-010	BT ARM SEMI ASSY		1
	3-8	*S8-059-080-090	BACK TENSION SUPPORT		1
	3-9	*S8-059-020-230	DAMPER RUBBER		1
	3-10	*S8-059-020-290	TRACKING ADJUSTER		1
	3-11	*S8-059-020-260	TAPE GUIDE SPRING		1
	3-12	*S8-000-030-290	TAPE GUIDE FLANGE D		1
	3-13	*S8-000-030-140	TAPE GUIDE		1
	3-14	*S8-000-030-280	TAPE GUIDE FLANGE C		1
	3-15	*S8-000-030-190	GUIDE CAP		1
	3-16	*S8-059-023-010	OPEN ANGLE ASSY		1
	3-17	*S6-808-080-040	DEW SENSOR EYH-S10R		1
	3-18	*S8-059-100-100	BRAKE ACTUATE BASE SPRING		1
	3-19	*S8-059-100-090	BRAKE ACTUATE BASE		1
	3-20	*S8-059-100-110	BRAKE PLATE		1

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	3-21	★S8-059-100-120	BRAKE PLATE SPRING		1
	3-22	★S8-059-100-130	TRIGGER LEVER		1
	3-23	★S8-059-100-140	TRIGGER HOOK		1
	3-24	★S8-059-100-230	TRIGGER LEVER SPRING		1
	3-25	S8-059-053-010	REEL ASSY		2
	3-26	★S8-059-170-100	RG SLIDE PLATE COLLAR		1
	3-27	★S8-059-170-030	RG SLIDE PLATE		1
	3-28	★S8-059-170-110	RG SLIDE SPRING		1
	3-29	★S8-059-170-090	RG SLIDE BASE		1
	3-30	★S8-059-073-010	METAL HOUSING ASSY		1
	3-31	★S8-059-175-010	RG ARM SEMI ASSY		1
	3-32	S8-059-073-020	CAPSTAN MOTOR ASSY		1

EXPLODED VIEW – 7

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-096-000-00	TAMS SCREW 2.6×4	D	S9-096-000-00	TAMS SCREW 2.6×4	G	S9-504-000-00	E RING S2.5
B	S9-078-000-00	TAMS SCREW 2×5	E	S9-504-000-00	E RING S2.5			
C	S9-743-000-00	PW CUT 1.6×3.8×0.3	F	S9-192-000-00	C TAPPING SCREW 2.6×4			

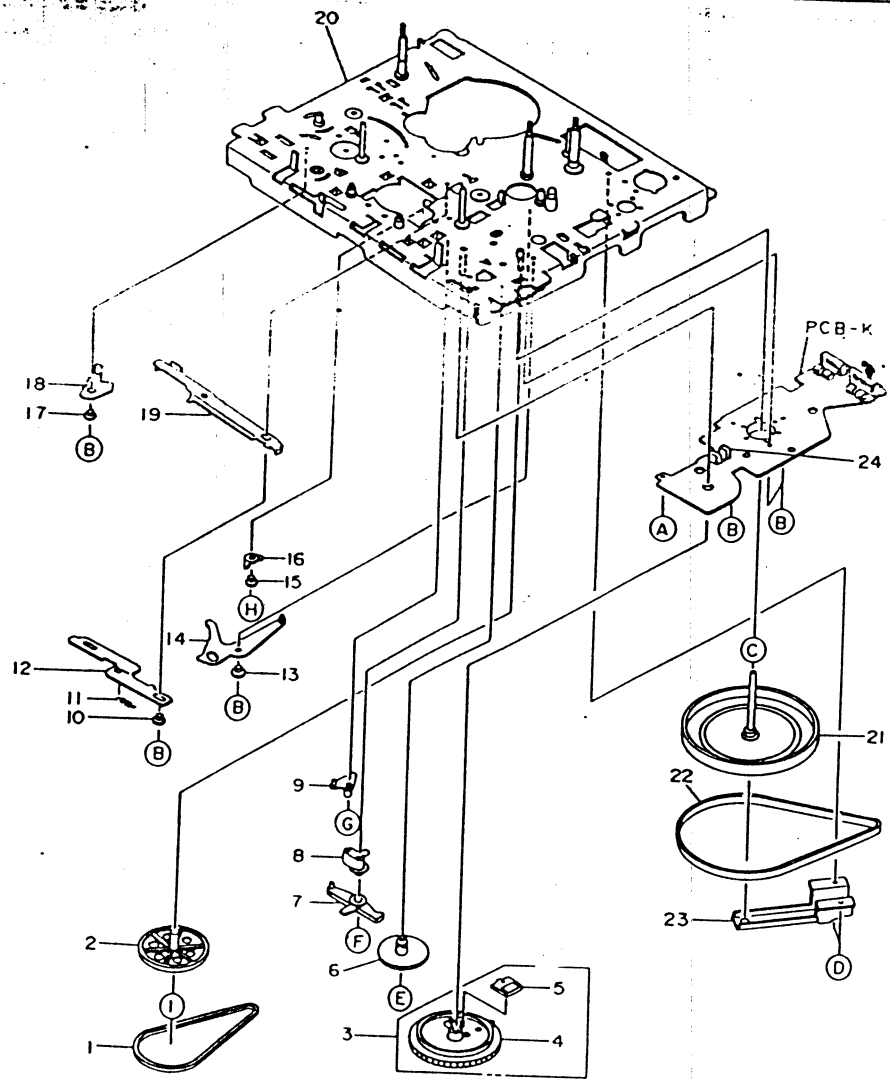


PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	7-1	*S8-059-160-600	SYNCHRONIZE SHAFT		1
	7-2	---	FRONT ANGLE ASSY		1
	7-3	*S8-059-160-250	TAPE GUIDE R		1
	7-4	*S8-059-160-180	FRONT ANGLE		1
	7-5	*S8-059-160-240	TAPE GUIDE L		1
	7-6	*S8-000-220-070	UPPER PLATE		1
	7-7	*S8-059-160-170	SYNCHRONIZE GEAR A		2
	7-8	*S8-059-163-220	FRAME R ASSY		1
	7-9	---	OPEN LEVER GUIDE		1
	7-10	---	FRAME R SEMI ASSY		1
	7-11	---	GUIDE SLEEVE		1
	7-12	*S8-059-163-180	C LOAD BRACKET ASSY		1
	7-13	---	SENSOR P.C.B RM ASSY		1
	7-14	---	F WORM BEARING A		1
	7-15	---	C LOAD BRACKET SEMI ASSY		1
	7-16	---	IN SW LEVER		1
	7-17	---	S SW LEVER		1
	7-18	*S8-059-163-190	F LOADING CLUTCH ASSY		1
	7-19	*S8-059-163-210	WORMWHEEL ASSY		1
	7-20	---	FRICTION GEAR		1
	7-21	---	FRICTION SPRING		1
	7-22	---	WORMWHEEL		1
	7-23	*S8-059-163-120	LIFT GEAR R ASSY		1
	7-24	---	LP SPRING		1
	7-25	---	LIFT GEAR R		1
	7-26	---	LIFT ARM		1

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	4-1	*S8-059-060-240	P SLIDE PLATE A		1
	4-2	*S8-059-060-250	P SLIDE PLATE B		1
	4-3	*S8-059-060-180	COLLAR		1
	4-4	S8-059-063-010	PINCH ROLLER ARM ASSY		1
	4-5	*S8-059-065-010	PINCH ROLLER ARM SEMI ASSY		1
	4-6	S8-000-090-220	PINCH ROLLER A		1
	4-7	*S8-059-060-190	P ANGLE HOLDER		1
	4-8	*S8-059-060-200	P-SPRING,ROLLER		1
	4-9	*S8-059-060-060	JOINT PLATE		1
	4-10	*S8-059-060-050	P ACTUATE ANGLE		1
	4-11	*S8-059-060-180	COLLAR		1
	4-12	*S8-059-060-040	P ACTUATE ARM		1
	4-13	*S8-059-060-090	P-SPRING,ACTUATE ARM		1
	4-14	*S8-059-040-090	TAPE GUIDE FLANGE SPRING		1
	4-15	*S8-059-040-070	TAPE GUIDE FLANGE A		1
	4-16	*S8-059-040-060	IMPEDANCE ROLLER SLEEVE		1
	4-17	*S8-059-040-050	IMPEDANCE ROLLER		1
	4-18	*S8-059-043-080	HEAD BASE ASSY		1
	4-19	---	AZIMUTH SPRING SCREW		1
	4-20	---	AZIMUTH SPRING		1
	4-21	S6-204-150-060	ACE HEAD HV225211		1
	4-22	---	HEAD BASE SEMI ASSY		1
	4-23	---	HEAD SPRING		1
	4-24	*S8-059-093-050	P GEAR ASSY		1
	4-25	*S8-059-090-200	PLAY GEAR		1
	4-26	*S8-059-093-030	P GEAR ARM ASSY		1
	4-27	*S8-059-093-060	RF GEAR ASSY		1
	4-28	*S8-059-090-220	FF GEAR		1
	4-29	*S8-059-093-040	RF GEAR ARM ASSY		1
	4-30	*S8-059-093-070	SUB PLATE ASSY		1
	4-31	*S8-059-100-070	T SOFT BRAKE ARM COLLAR		1
	4-32	*S8-059-103-030	T SOFT BRAKE ASSY		1
	4-33	*S8-059-100-060	T-SPRING,SOFT BRAKE ARM		1
	4-34	---	SUB PLATE SEMI ASSY		1
	4-35	*S8-000-100-250	WAVE WASHER		3
	4-36	*S8-059-090-060	REEL DRIVE GEAR		2
	4-37	*S8-059-100-160	BRAKE LIFTER		1
	4-38	*S8-059-100-180	L BRAKE ACTUATOR SPRING		1
	4-39	*S8-059-100-170	L BRAKE ACTUATOR		1
	4-40	*S8-059-103-010	S BRAKE ARM ASSY		1
	4-41	*S8-059-100-190	BRAKE SHOE		2
	4-42	*S8-059-100-010	S BRAKE ARM		1
	4-43	*S8-059-100-020	BRAKE ARM SPRING		2
	4-44	*S8-059-103-020	T BRAKE ARM ASSY		1
	4-45	*S8-059-100-030	T BRAKE ARM		1
	4-46	S8-059-113-010	LM ASSY		1
	4-47	*S8-059-113-020	TRIGGER BEARING ASSY		1
	4-48	---	FE PLATE		1
	4-49	*S8-059-040-080	FE PLATE SPRING		1
	4-50	*S6-204-150-030	FE HEAD HVFMD 0006		1
	4-51	*S8-059-043-020	FE PLATE ASSY		1
	4-52	*S8-059-040-100	FE SLIDE PLATE		1
	4-53	*S8-059-040-120	FE ACTUATE SPRING		1
	4-54	*S8-059-040-110	FE ACTUATE LEVER		1

EXPLODED VIEW – 6

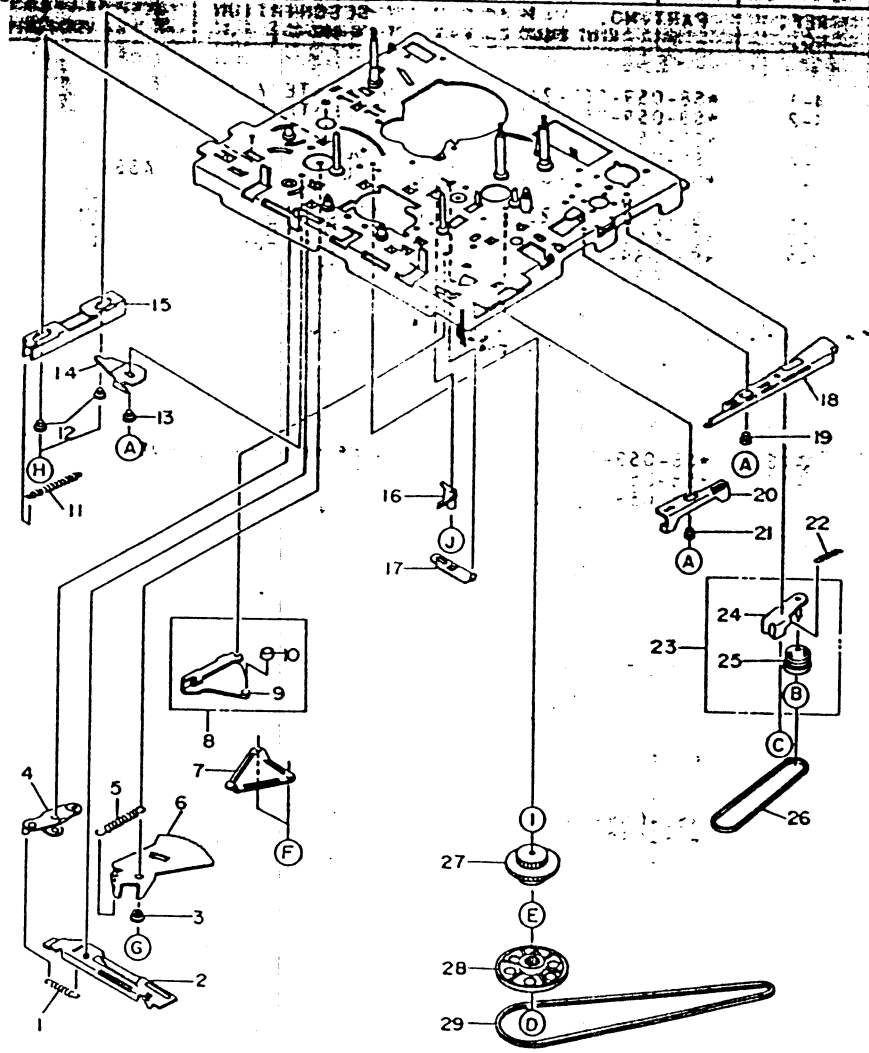
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-671-000-00	S TAPPING SCREW 2.6×5	D	S9-202-000-00	C TAPPING SCREW 3×5	G	S9-884-000-00	PW CUT 2.6×6×0.5
B	S9-192-000-00	C TAPPING SCREW 2.6×5	E	S9-876-000-00	PW CUT 2.1×5×0.5	H	S9-999-180-10	C TAPPING FH SCREW 2.6×4
C	S9-912-000-00	PW 3.1×6×0.5	F	S9-999-030-10	PW CUT 2.6×8×0.5	I	S9-743-000-00	PW CUT 1.6×3.8×0.3



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q. TY
	6-1	S8-059-110-060	LOADING BELT		1
	6-2	*S8-059-110-030	LOADING PULLEY		1
	6-3	*S8-059-113-030	LOADING CAM ASSY		1
	6-4	---	LOADING CAM		1
	6-5	---	S BRUSH		1
	6-6	*S8-059-110-040	LOADING GEAR		1
	6-7	*S8-059-110-140	EJECT ARM		1
	6-8	*S8-059-110-130	BRAKE ACTUATE ARM		1
	6-9	*S8-059-110-120	SEARCH ARM B		1
	6-10	*S8-059-060-110	P SLIDER COLLAR		1
	6-11	*S8-059-060-230	P-SPRING, SLIDER		1
	6-12	*S8-059-060-100	P SLIDER		1
	6-13	*S8-059-060-170	P CAM LEVER COLLAR		1
	6-14	*S8-059-065-020	P CAM LEVER SEMI ASSY		1
	6-15	*S8-059-060-130	P CRANK COLLAR		1
	6-16	*S8-059-060-120	P CRANK		1
	6-17	*S8-059-060-180	COLLAR		1
	6-18	*S8-059-080-230	BT RETURN LEVER		1
	6-19	*S8-059-080-100	BT CHANGE PLATE		1
	6-20	---	CHASSIS SEMI ASSY		1
	6-21	*S8-059-070-140	FLYWHEEL CAPSTAN		1
	6-22	S8-059-070-100	MAIN BELT		1
	6-23	*S8-059-073-030	FL ANGLE ASSY		1
	6-24	*S6-808-080-030	REEL SENSOR		1

EXPLODED VIEW—5

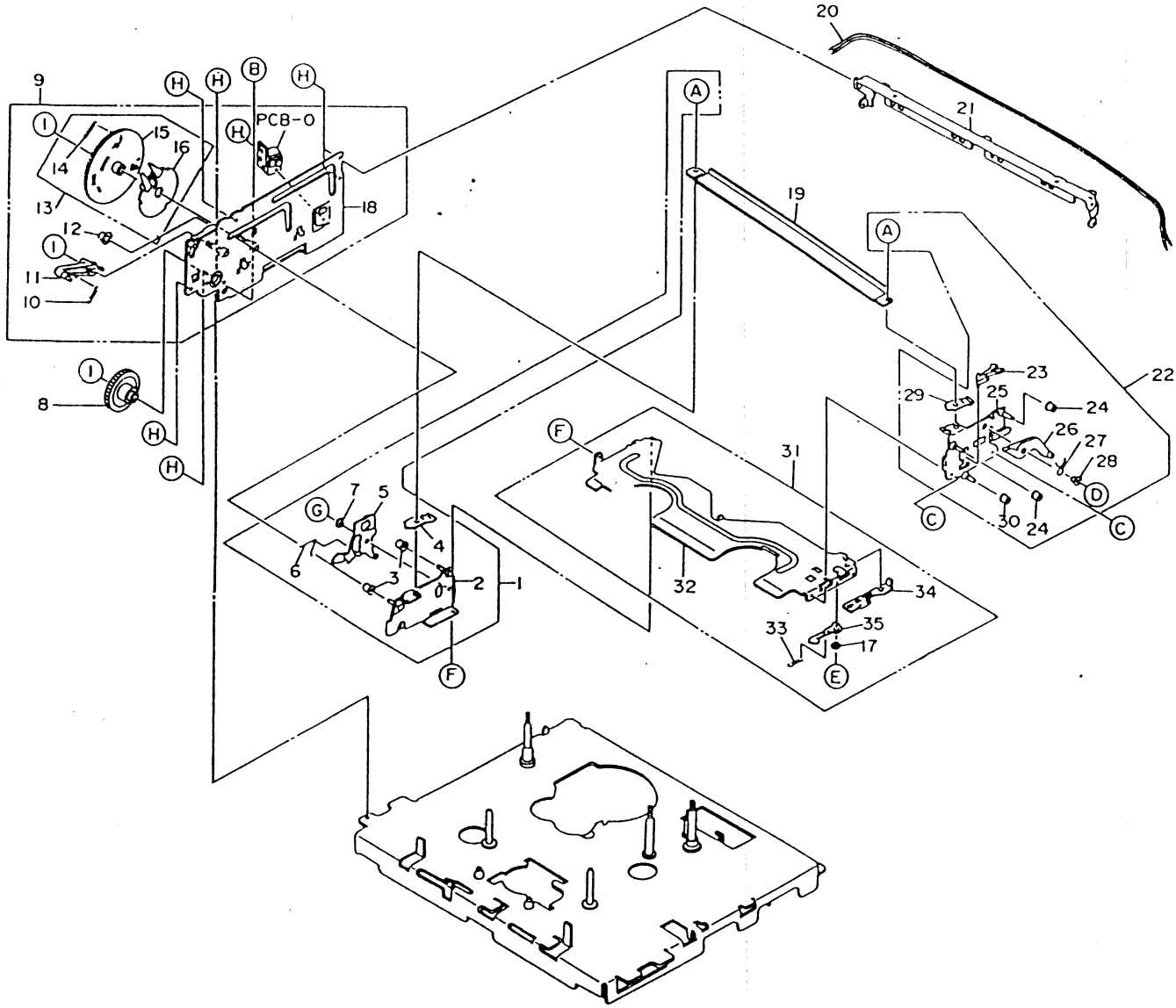
REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-192-000-00	C TAPPING SCREW 2.6×5	E	S9-999-060-04	NYLON WASHER 2.98×6×0.3	I	S9-853-000-00	NYLON WASHEER 3.1×6×0.3
B	S9-743-000-00	PW CUT 2.6×3.8×0.5	F	S9-078-000-00	TAMS SCREW 2×5	J	S9-876-000-00	PW CUT 2.1×5×0.5
C	S9-876-000-00	PW CUT 2.1×6×0.5	G	S9-203-000-00	C TAPPING SCREW 3×6			
D	S9-884-000-00	PW CUT 2.6×6×0.5	H	S9-840-000-00	S TAPPING SCREW 2.6×3.5			



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	5-1	*S8-059-120-050	LOADING ACTUATOR SPRING		1
	5-2	*S8-059-125-030	LOADING ACTUATOR SEMI ASSY		1
	5-3	*S8-059-120-100	L GEAR PLATE COLLAR		1
	5-4	*S8-059-125-020	LOADING ACTUATE LEVER SEMI ASSY		1
	5-5	*S8-059-120-120	L GEAR PLATE SPRING		1
	5-6	*S8-059-120-090	L GEAR PLATE		1
	5-7	*S8-059-120-110	LOADING LEVER REINFORCE PLATE		1
	5-8	*S8-059-123-010	LOADING LEVER ASSY		1
	5-9	---	LOADING LEVER SEMI ASSY		1
	5-10	---	CAM ROLLER		1
	5-11	*S8-059-080-130	BACK TENSION SPRING		1
	5-12	*S8-059-080-210	BT ACTUATE PLATE COLLAR		2
	5-13	*S8-059-060-180	COLLAR		1
	5-14	*S8-059-080-180	BT ACTUATE LEVER		1
	5-15	*S8-059-080-190	BT ACTUATE PLATE		1
	5-16	*S8-059-170-010	RG ACTUATE ARM		1
	5-17	*S8-059-170-020	RG ACTUATE		1
	5-18	*S8-059-150-070	L BRAKE PLATE		1
	5-19	*S8-059-060-180	COLLAR		1
	5-20	*S8-059-150-080	EJECT ACTUATOR		1
	5-21	*S8-059-060-180	COLLAR		1
	5-22	*S8-059-150-110	IDLER ARM SPRING		1
	5-23	*S8-059-153-030	E IDLER ARM ASSY		1
	5-24	---	E IDLER ARM SEMI ASSY		1
	5-25	---	EJECT PULLEY		1
	5-26	S8-059-150-060	FL BELT		1
	5-27	*S8-059-093-020	CLUTCH ASSY		1
	5-28	*S8-059-093-010	MIDDLE PULLEY ASSY		1
	5-29	*S8-059-090-170	DRIVE BELT		1

EXPLODED VIEW – 8

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
A	S9-833-000-00	SCREW 2.3×2	D	S9-967-000-00	SL SCREW 2×4	G	S9-966-000-00	SL SCREW 2×2.5
B	S9-192-000-00	C TAPPING SCREW 2.6×4	E	S9-968-000-00	SL SCREW 2.6×3	H	S9-096-000-00	TAMS SCREW 2.6×4
C	S9-556-000-00	SCREW 2.6×3	F	S9-991-000-00	SCREW 2.3×2.5	I	S9-504-000-00	E RING S2.5



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	8-1	*S8-059-163-090	SIDE PLATE L ASSY		
	8-2	---	SIDE PLATE L SEMI ASSY		1
	8-3	---	GUIDE ROLLER		1
	8-4	---	CASSETTE PUSH PLATE		2
	8-5	---	C LCOK PLATE L		1
	8-6	---	LOCK PLATE SPRING L		1
	8-7	---	LOCK PLATE COLLAR		
	8-8	*S8-059-160-170	SYNCHRONIZE GEAR A		1
	8-9	*S8-059-163-130	FRAME L ASSY		1
	8-10	---	LIFT LEVER SPRING		2
	8-11	*S8-000-220-760	LIFT LEVER		1
	8-12	---	GUIDE SLEEVE		1
	8-13	*S8-059-163-140	LIFT GEAR L ASSY		1
	8-14	---	LP SPRING		1
	8-15	---	LIFT GEAR L		1
	8-16	---	LIFT ARM		1
	8-17	---	COLLAR		
	8-18	---	FRAME L SEMI ASSY		1
	8-19	*S8-000-220-650	TOP STAY		1
	8-20	---	END SENSOR WIRE		1
	8-21	*S8-059-160-090	REAR ANGLE		1
	8-22	*S8-059-163-080	SIDE PLATE R ASSY		
	8-23	---	LOCK RELEASE LEVER		1
	8-24	---	GUIDE ROLLER		1
	8-25	---	SIDE PLATE R SEMI ASSY		1
	8-26	*S8-000-220-250	OPEN LEVER		2
	8-27	---	OPEN LEVER SPRING		1
	8-28	---	OPEN LEVER COLLAR		
	8-29	---	CASSETTE PUSH PLATE		1
	8-30	---	GUIDE ROLLER		1
	8-31	*S8-059-163-060	CASSETTE HOLDER ASSY		1
	8-32	---	CASSETTE HOLDER		
	8-33	---	LOCK SPRING		1
	8-34	---	SLIDE PLATE		1
	8-35	---	C LOCK PLATE A		1
					1